K 6

```
FFFFFFFFFFFFFFF     000000000     RRRRRRRRRRRR     RRRRRRRRRRRR     TTTTTTTTTTTTTTT  LLL
FFFFFFFFFFFFFFF     000000000     RRRRRRRRRRRR     RRRRRRRRRRRR     TTTTTTTTTTTTTTT  LLL
FFFFFFFFFFFFFFF     000000000     RRRRRRRRRRRR     RRRRRRRRRRRR     TTTTTTTTTTTTTTT  LLL
FFF              000         000  RRR         RRR  RRR         RRR        TTT        LLL
FFF              000         000  RRR         RRR  RRR         RRR        TTT        LLL
FFF              000         000  RRR         RRR  RRR         RRR        TTT        LLL
FFF              000         000  RRR         RRR  RRR         RRR        TTT        LLL
FFF              000         000  RRR         RRR  RRR         RRR        TTT        LLL
FFF              000         000  RRR         RRR  RRR         RRR        TTT        LLL
FFFFFFFFFFFF     000         000  RRRRRRRRRRRR     RRRRRRRRRRRR           TTT        LLL
FFFFFFFFFFFF     000         000  RRRRRRRRRRRR     RRRRRRRRRRRR           TTT        LLL
FFFFFFFFFFFF     000         000  RRRRRRRRRRRR     RRRRRRRRRRRR           TTT        LLL
FFF              000         000  RRR   RRR        RRR   RRR              TTT        LLL
FFF              000         000  RRR   RRR        RRR   RRR              TTT        LLL
FFF              000         000  RRR   RRR        RRR   RRR              TTT        LLL
FFF              000         000  RRR      RRR     RRR      RRR           TTT        LLL
FFF              000         000  RRR      RRR     RRR      RRR           TTT        LLL
FFF              000         000  RRR      RRR     RRR      RRR           TTT        LLL
FFF                 000000000     RRR         RRR  RRR         RRR        TTT        LLLLLLLLLLLLLLL
FFF                 000000000     RRR         RRR  RRR         RRR        TTT        LLLLLLLLLLLLLLL
FFF                 000000000     RRR         RRR  RRR         RRR        TTT        LLLLLLLLLLLLLLL
```

```
**FILE**ID**FORFMTCP                                    M 9




FFFFFFFFFF    000000    RRRRRRRR    FFFFFFFFFF  MM      MM  TTTTTTTTTT    CCCCCCCC  PPPPPPPP
FFFFFFFFFF    000000    RRRRRRRR    FFFFFFFFFF  MM      MM  TTTTTTTTTT    CCCCCCCC  PPPPPPPP
FF          00      00  RR      RR  FF          MMMM  MMMM      TT      CC          PP      PP
FF          00      00  RR      RR  FF          MMMM  MMMM      TT      CC          PP      PP
FF          00      00  RR      RR  FF          MM  MM  MM      TT      CC          PP      PP
FF          00      00  RR      RR  FF          MM  MM  MM      TT      CC          PP      PP
FFFFFFFF    00      00  RRRRRRRR    FFFFFFFF    MM      MM      TT      CC          PPPPPPPP
FFFFFFFF    00      00  RRRRRRRR    FFFFFFFF    MM      MM      TT      CC          PPPPPPPP
FF          00      00  RR  RR      FF          MM      MM      TT      CC          PP
FF          00      00  RR  RR      FF          MM      MM      TT      CC          PP
FF          00      00  RR    RR    FF          MM      MM      TT      CC          PP              ....
FF          00      00  RR    RR    FF          MM      MM      TT      CC          PP              ....
FF            000000    RR      RR  FF          MM      MM      TT        CCCCCCCC  PP              ....
FF            000000    RR      RR  FF          MM      MM      TT        CCCCCCCC  PP              ....

LL            IIIIII      SSSSSSSS
LL            IIIIII      SSSSSSSS
LL              II      SS
LL              II      SS
LL              II      SS
LL              II      SS
LL              II        SSSSSS
LL              II        SSSSSS
LL              II              SS
LL              II              SS
LL              II              SS
LL              II              SS
LLLLLLLLLL    IIIIII    SSSSSSSS
LLLLLLLLLL    IIIIII    SSSSSSSS
```

```
0 MODULE FOR$$FMTCP (%TITLE'FORTRAN OBJECT TIME FORMAT COMPILER'
0                   IDENT = '2-006'          ! File: FORFMTCP.B32  Edit: SBL2006
0                   ) =
1 BEGIN
1 !***************************************************************************
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1 !*                                                                         *
1 !*                                                                         *
1 !***************************************************************************
1 !
1
1 !++
1 ! FACILITY: FORTRAN SUPPORT LIBRARY
1 !
1 ! ABSTRACT:
1 !
1 !       This module is the run-time FORTRAN format compiler, FOR$$FMT_COMPIL.
1 !       It translates a format into the same form that the FORTRAN
1 !       compiler does.  This module is adapted from the equivalent
1 !       compiler module, therefore changes in this module should be
1 !       evaluated to see if the compiler should be changed, and vice versa.
1 !
1 ! ENVIRONMENT: User access mode; AST re-entrant
1 !
1 ! AUTHOR: Peter Yuo, CREATION DATE: 07-June-77
1 !
1 ! MODIFIED BY:
1 !
1 !         Joel Clinkenbeard (FORTRAN IV-PLUS)
1 !         Steven B. Lionel (Run-Time Library)
1 !         Version 2  15-May-1979
1 !
1 ! EDIT HISTORY:
1 !
1 ! 2-001 - Update to level of Version 2.0 FORTRAN compiler, including
1 !         FORTRAN-77 format codes.  SBL 15-May-1979
1 ! 2-002 - X is now the same as TR.  SBL 2-Aug-1979
1 ! 2-003 - Eliminate an extraneous RETURN expression.  JBS 06-SEP-1979
1 ! 2-004 - Allow sequences such as ",,", ",)" without error.  SBL 18-Dec-1979
1 ! 2-005 - Allow null characters in quoted literals and Hollerith literals.
```

```
:    58          0058  1 !          SPR 11-44210 SBL 1-March-1982
:    59          0059  1 ! 2-006 - Allow W value to be zero; new extension for V4.  Use prologue file.
:    60          0060  1 !          SBL 26-Apr-1983
:    61          0061  1 !--
:    62          0062  1
```

```
  1 !
  1 ! PROLOGUE FILE:
  1 !
  1
  1 REQUIRE 'RTLIN:FORPROLOG';                             ! FORTRAN definitions
  1
  1 !
  1 ! LINKAGES:
  1 !
  1
  1 LINKAGE
  1     CALL_G3 = CALL : GLOBAL (SAVVAL = 11, SAVTYP = 10, PTR = 9);
  1
  1 !
  1 ! TABLE OF CONTENTS:
  1 !
  1
  1 FORWARD ROUTINE
  1     FOR$$FMT_COMPIL : NOVALUE,
  1     REDUCE : NOVALUE CALL_G3,
  1     DEFER : NOVALUE CALL_G3,
  1     UNDEFER : NOVALUE CALL_G3,
  1     NZERO : NOVALUE CALL_G3,
  1     NSAVE : NOVALUE CALL_G3,
  1     PUTBYT : NOVALUE CALL_G3,
  1     BYTSIZ;
  1
  1 !
  1 ! MACROS:
  1 !
  1
  1 MACRO
M 1     ERROR (ERR_SYM) =
M 1         (FOR$$SIGNAL_STO (FOR$K_SYNERRFOR);
  1         RETURN (0)) %,
M 1     EXT_REG =
M 1         EXTERNAL REGISTER
M 1             SAVVAL: REF VECTOR[,LONG],
M 1             SAVTYP: REF VECTOR[,LONG],
  1             PTR: REF VECTOR[,LONG] %,
M 1     GC =
M 1
  1         CH$RCHAR_A (FORMAT_PTR) %,
M 1     GNB =
M 1
M 1         BEGIN
M 1         FORMAT_PTR = CH$FIND_NOT_CH (K_MAX_LENGTH, .FORMAT_PTR, %C' ') ;
M 1         IF CH$FAIL (.FORMAT_PTR)
M 1         THEN
M 1             ERROR (ERRFMTCHAR);
M 1         BEGIN
M 1         LOCAL
M 1             C;
M 1         C = CH$RCHAR_A (FORMAT_PTR);
M 1         IF (.C GEQU %C'a') AND (.C LEQU %C'z')
M 1         THEN
M 1             .C - (%C'a' - %C'A')
```

```
;   121          M 0185  1          ELSE
;   122          M 0186  1              .C
;   123          M 0187  1          END
;   124            0188  1          END %;
;   125            0189  1
;   126            0190  1 !
;   127            0191  1 ! EXTERNAL REFERENCES:
;   128            0192  1 !
;   129            0193  1
;   130            0194  1 EXTERNAL ROUTINE
;   131            0195  1     FOR$$GET_VM,                                 ! Get dynamic virtual memory
;   132            0196  1     FOR$$FREE_VM : NOVALUE,                      ! Free dynamic virtual memory
;   133            0197  1     FOR$$SIGNAL_STO : NOVALUE;                   ! signal-stop FOR$_abcmnoxyz, given
;   134            0198  1
;   135            0199  1                                                  ! (short) Fortran error number (FOR$K_abcmnoxyz)
;   136            0200  1                                                  ! as a parameter
;   137            0201  1 !
;   138            0202  1 ! OWN STORAGE:
;   139            0203  1 !
;   140            0204  1 !      NONE
;   141            0205  1 !
;   142            0206  1 ! EQUATED SYMBOLS:
;   143            0207  1 !
;   144            0208  1
;   145            0209  1 LITERAL
;   146            0210  1     TRUE = 1,
;   147            0211  1     K_FMT_BUF_INIT = 256,                        ! initial length (bytes) of format buffer
;   148            0212  1     K_MAX_LENGTH = 65535,                        ! max. length of input character array
;   149            0213  1
;   150            0214  1     !+
;   151            0215  1     ! Define offsets into LOCAL VECTOR pointed to by GLOBAL register PTR
;   152            0216  1     !-
;   153            0217  1
;   154            0218  1     L_FDEFER = 0,                                ! format code for deffered item
;   155            0219  1     L_FCOUNT = 1,                                ! count of W, D, for deferred item
;   156            0220  1     L_PHASE = 2,                                 ! index to SAVVAL and SAVTYP
;   157            0221  1     L_NEST = 3,                                  ! parenthesis nest level
;   158            0222  1     L_SIGN = 4,                                  ! non-zero if minus sign seen
;   159            0223  1     L_NVAL = 5,                                  ! value of numberic item
;   160            0224  1     L_TYPE = 6,                                  ! type of numeric item
;   161            0225  1     L_NCHAR = 7,                                 ! character index within FMT_BUF
;   162            0226  1     A_FMT_BUF_BEG = 8,                           ! pointer to beginning of compiled output
;   163            0227  1     L_CPRIME = 9,                                ! previous character
;   164            0228  1     L_FMT_BUF_SIZ = 10,                  ! current size (bytes) of dynamically allocated format buffer
;   165            0229  1
;   166            0230  1     !+
;   167            0231  1     ! Define size constants for the LOCAL structures
;   168            0232  1     !-
;   169            0233  1
;   170            0234  1     K_PTR_SIZ = 11,                              ! No. of local variables pointed to by PTR
;   171            0235  1     K_SAVVAL_SIZ = 4,                            ! No. of longwords in SAVVAL
;   172            0236  1     K_SAVTYP_SIZ = 4,                            ! No. of longwords in SAVTYP
;   173            0237  1     K_PTR_OFFSET = K_SAVVAL_SIZ + K_SAVTYP_SIZ,  ! Offset into local storage
;   174            0238  1                                                  ! of PTR
;   175            0239  1     K_LOCAL_SIZ = K_PTR_OFFSET + K_PTR_SIZ;      ! Total size of LOCAL storage (longwords)
;   176            0240  1
;   177            0241  1 BIND
```

```
1        ! CHARACTER CLASS TABLE
1        !
1        K_CLASS_TAB_MAX = 132,                           ! MAX. LEGAL CHARACTER (OUTSIDE OF STRING CONSTANT)
1        CLASS = UPLIT BYTE(
1                  1,  0,  0,  0,  0,  0,  0,  0,         ! 000
1                  0,  0,  0,  0,  0,  0,  0,  0,         ! 010
1                  0,  0,  0,  0,  0,  0,  0,  0,         ! 020
1                  0,  0,  0,  0,  0,  0,  0,  0,         ! 030
1                  0,  0,  0,  0,  9,  0,  0, 13,         ! 040
1                  6,  7,  0,  3, 11,  2, 12,  8,         ! 050
1                  5,  5,  5,  5,  5,  5,  5,  5,         ! 060
1                  5,  5, 10,  0,  4,  0,  0,  0,         ! 070
1                  0, 14, 15,  0, 16, 17, 18, 19,         ! 100
1                 20, 21,  0,  0, 22,  0,  0, 23,         ! 110
1                 24, 25,  0, 26, 27,  0,  0,  0,         ! 120
1             28, 0, 29) : VECTOR [, BYTE];               ! 130
1
1 BIND
1        ! FORMAT CODES
1        !
1        TOPLVL = 1,                                      ! Format reversion point
1        LPAREN = 2,                                      ! Left parenthesis
1        RPAREN = 3,                                      ! Right parenthesis
1        ENDFMT = 4,                                      ! End of format
1        SLASH = 5,                                       ! Slash
1        DOLLAR = 6,                                      ! Dollar sign
1        COLON = 7,                                       ! Colon
1        SCODE = 9,                                       ! S
1        SPCODE = 10,                                     ! SP
1        SSCODE = 11,                                     ! SS
1        PCODE = 12,                                      ! P
1        TCODE = 13,                                      ! T
1        XCODE = 14,                                      ! X
1        HCODE = 15,                                      ! H or quote
1        BNCODE = 16,                                     ! BN
1        BZCODE = 17,                                     ! BZ
1        TLCODE = 18,                                     ! TL
1        TRCODE = 19,                                     ! TR
1        QCODE = 20,                                      ! Q
1        ACODE = 21,                                      ! A
1        LCODE = 22,                                      ! L
1        OCODE = 23,                                      ! O
1        ICODE = 24,                                      ! I
1        ZCODE = 25,                                      ! Z
1        FCODE = 30,                                      ! F
1        ECODE = 31,                                      ! E
1        GCODE = 32,                                      ! G
1        DCODE = 33,                                      ! D
1        IOZOFFSET = 3,                                   ! Offset for Iw.m,Ow.m,Zw.m
1        EGOFFSET = 3,                                    ! Offset for E,G with Ee exponent
1        OFFSET = 20;                                     ! Offset to default A...D codes
1
```

```
1 GLOBAL ROUTINE FOR$$FMT_COMPIL (                        ! RUN-TIME FORMAT COMPILER
1         FORMAT,                                         ! Address of the source format statement
1         ALLOCATED_LEN,                                  ! Length of the encoded format
1         ALLOCATED_ADR                                   ! Address of the encoded format
1     ) : NOVALUE =
1
1 !++
1 ! FUNCTIONAL DESCRIPTION:
1 !
1 !       Process the format statement.  If there is any illegal
1 !       character encounted, calls error routine and return.
1 !       Otherwise, it will process each format code one at a time
1 !       and output compiled encoding whenever all the information
1 !       has been gathered.
1 !
1 ! FORMAL PARAMETERS:
1 !
1 !       FORMAT.rbu.ra           Address of the source format statment text
1 !       ALLOCATED_LEN.ww.r      Address of a word containing the length of the
1 !                               compiled format encoding fori the source
1 !                               format statement
1 !       ALLOCATED_ADR.wa.r      Address of a longword containing the
1 !                               address of the compiled format encoding for
1 !                               the source format statement
1 !
1 ! IMPLICIT INPUTS:
1 !
1 !       NONE
1 !
1 !
1 ! IMPLICIT OUTPUTS:
1 !
1 !       FMTDAT array
1 !
1 ! ROUTINE VALUE:
1 !
1 !       NONE
1 !
1 ! SIDE EFFECTS:
1 !
1 !       SIGNAL_STOPs FOR$SYNERRFOR (62="SYNTAX ERROR IN FORMAT")
1 !
1 !--
1
2     BEGIN
2
2     MAP
2         ALLOCATED_LEN : REF VECTOR [1, WORD],
2         ALLOCATED_ADR : REF VECTOR [1, LONG];
2
2     GLOBAL REGISTER
2         SAVVAL = 11 : REF VECTOR [K_SAVVAL_SIZ],          ! pointer to value N, W, D
2         SAVTYP = 10 : REF VECTOR [K_SAVTYP_SIZ],          ! pointer to type of N, W, D
2         PTR = 9 : REF VECTOR [K_PTR_SIZ];         ! pointer to rest of LOCAL array
2
2     LOCAL
2         CHAR,                                   ! LAST CHARACTER FROM SOURCE
```

```
2           FORMAT_PTR,                                 ! Address of last character from source
2           FMTDAT : VECTOR [K_LOCAL_SIZ];              ! impure data for format processing
2
2   !+
2   ! Bind names to LOCAL storage for this routine only.  Calls to other routines
2   ! access these locations using .PTR[L_name].
2   !-
2
2       BIND
2           FDEFER = FMTDAT [K_PTR_OFFSET + L_FDEFER],        ! FORMAT CODE FOR DEFERRED ITEM
2           FCOUNT = FMTDAT [K_PTR_OFFSET + L_FCOUNT],        ! COUNT OF W, D FOR DEFERRED ITEM
2           PHASE = FMTDAT [K_PTR_OFFSET + L_PHASE],          ! INDEX TO SAVVAL AND SAVTYP
2           NEST = FMTDAT [K_PTR_OFFSET + L_NEST],  ! PARENTHESIS NEST LEVEL
2           SIGN = FMTDAT [K_PTR_OFFSET + L_SIGN],  ! -1 if neg, 1 if pos, 0 if no sign
2           NVAL = FMTDAT [K_PTR_OFFSET + L_NVAL],  ! VALUE OF NUMERIC ITEM
2           TYPE = FMTDAT [K_PTR_OFFSET + L_TYPE],  ! TYPE OF NUMERIC ITEM
2           ! -1 = VARIABLE FORMAT EXPRESSION
2           !  0 = NOT PRESENT
2           ! +1 = CONSTANT
2           NCHAR = FMTDAT [K_PTR_OFFSET + L_NCHAR],          ! CHARACTER INDEX WITHIN FMT_BUF
2           FMT_BUF_BEG = FMTDAT [K_PTR_OFFSET + A_FMT_BUF_BEG],
2                                                             ! POINTER TO BEGINING OF COMPILED OUTPUT FORMAT BUFFER
2           CPRIME = FMTDAT [K_PTR_OFFSET + L_CPRIME],        ! PREVIOUS CHARACTER
2           FMT_BUF_SIZ = FMTDAT [K_PTR_OFFSET + L_FMT_BUF_SIZ];
2
2                                                       ! CURRENT ALLOCATION FOR DYNAMICALLY ALLOCATED FORMAT BUFFER
2
2       !+
2       ! Setup GLOBAL registers to be passed to other routines
2       !-
2
2       SAVVAL = FMTDAT [0];                            ! Set pointer to value of N, W, D parameters
2       SAVTYP = FMTDAT [K_SAVVAL_SIZ];                 ! Set pointer to type of N, W, D parameters
2       PTR = FMTDAT [K_PTR_OFFSET];                    ! Set pointer to remainder of local storage
2       ! ACTUALLY PROCESS THE FORMAT SPECIFICATION
2       ! Clear LOCAL storage, and allocate initial format buffer
2       !
2       FILL_VAL (0, K_LOCAL_SIZ, FMTDAT);
2       FMT_BUF_BEG = FOR$$GET_VM (K_FMT_BUF_INIT);
2       FMT_BUF_SIZ = K_FMT_BUF_INIT;
2       CPRIME = '(';
2       FORMAT_PTR = CH$PTR (.FORMAT);
2       FORMAT_PTR = CH$FIND_NOT_CH (K_MAX_LENGTH, .FORMAT_PTR, %C' ');
2
2       IF CH$FAIL (.FORMAT_PTR) OR CH$RCHAR_A (FORMAT_PTR) NEQ %C'('
2       THEN
3           ERROR (ERRMISSDLM)
2       ELSE
3           BEGIN
3
3           WHILE 1 DO
4               BEGIN
4               CHAR = GNB;                             ! Get next non-blank
4
4               IF .CHAR GTRU K_CLASS_TAB_MAX THEN ERROR (ERRFMTCHAR);
4
4               CASE .CLASS [.CHAR] FROM 0 TO 29 OF
```

```
SET

[0] !
    ! 0 - INVALID CHARACTER
    !
    ERROR (ERRFMTCHAR);

[1] !
    ! 1 - NULL CHARACTER
    !
    ERROR (ERRFMTRPAR);

[2] !
    ! 2 - MINUS SIGN
    !
    BEGIN

    IF .SIGN NEQ 0 OR .TYPE NEQ 0 THEN ERROR (ERRFMTCHAR);

    SIGN = -1;
    END;

[3] !
    ! 3 - PLUS SIGN
    !
    BEGIN

    IF .SIGN NEQ 0 OR .TYPE NEQ 0 THEN ERROR (ERRFMTCHAR);

    SIGN = 1;
    END;

[4] !
    ! 4 - LEFT ANGLE BRACKET
    !
    ERROR (ERRFMTCHAR);

[5] !
    ! 5 - DIGIT
    !
    BEGIN
    TYPE = 1;
    NVAL = .NVAL*10 + .CHAR - '0';
    END;

[6] !
    ! 6 - LEFT PARENTHESIS
    !
    BEGIN
    NZERO ();
    NSAVE ();

    IF .NEST EQL 0 THEN PUTBYT (TOPLVL);

    IF (NEST = .NEST + 1) GTR 8 THEN ERROR (ERRFMTNEST);

    REDUCE (LPAREN);
```

```
;  402        0465 4                        END;
;  403        0466 4
;  404        0467 4                    [7] :
;  405        0468 4                        ! 7 - RIGHT PARENTHESIS
;  406        0469 4                        !
;  407        0470 5                        BEGIN
;  408        0471 5
;  409        0472 5                        !+
;  410        0473 5                        ! When the VAX-11 FORTRAN compiler sees the sequence ",)",
;  411        0474 5                        ! it issues a warning message and otherwise ignores the
;  412        0475 5                        ! extra delimiter.  A deliberate decision was made for
;  413        0476 5                        ! release 2 to ignore this occurrence entirely in the
;  414        0477 5                        ! run-time format compiler.
;  415        0478 5                        !-
;  416        0479 5 !                      IF .CPRIME EQL ',' THEN ERROR (ERRFMXTCOM);
;  417        0480 5
;  418        0481 5                        UNDEFER ();
;  419        0482 5
;  420        0483 5                        IF (NEST = .NEST - 1) LSS 0 THEN EXITLOOP;
;  421        0484 5
;  422        0485 5                        PUTBYT (RPAREN);
;  423        0486 4                        END;
;  424        0487 4
;  425        0488 4                    [8] :
;  426        0489 4                        ! 8 - SLASH
;  427        0490 4                        !
;  428        0491 5                        BEGIN
;  429        0492 5                        UNDEFER ();
;  430        0493 5                        PUTBYT (SLASH);
;  431        0494 4                        END;
;  432        0495 4
;  433        0496 4                    [9] :
;  434        0497 4                        ! 9 - DOLLAR SIGN
;  435        0498 4                        !
;  436        0499 5                        BEGIN
;  437        0500 5                        UNDEFER ();
;  438        0501 5                        PUTBYT (DOLLAR);
;  439        0502 4                        END;
;  440        0503 4
;  441        0504 4                    [10] :
;  442        0505 4                        ! 10 - COLON
;  443        0506 4                        !
;  444        0507 5                        BEGIN
;  445        0508 5                        UNDEFER ();
;  446        0509 5                        PUTBYT (COLON);
;  447        0510 4                        END;
;  448        0511 4
;  449        0512 4                    [11] :
;  450        0513 4                        ! 11 - COMMA
;  451        0514 4                        !
;  452        0515 5                        BEGIN
;  453        0516 5
;  454        0517 5                        !+
;  455        0518 5                        ! The sequence ",," or "(," is ignored here.  See comment
;  456        0519 5                        ! under RIGHT PARENTHESIS.
;  457        0520 5                        !-
;  458        0521 5 !                      IF .CPRIME EQL ',' OR .CPRIME EQL '(' THEN ERROR (ERRFMXTCOM);
5
5               UNDEFER ();
4               END;
4
4           [12] :
4               ! 12 - DECIMAL POINT
4               !
5               BEGIN
5
5               IF .TYPE EQL 0 THEN ERROR (ERRFMTNUMB);
5
5               IF .SIGN NEQ 0 THEN ERROR (ERRFMTRNGE);
5
5               IF .FCOUNT LSS 2 OR .PHASE NEQ 1 THEN ERROR (ERRFMTCHAR);
5
5               NSAVE ();
4               END;
4
4           [13] :
4               ! 13 - QUOTE
4               !
5               BEGIN
5
5               LOCAL
5                   P;
5
5               UNDEFER ();
5               P = .FORMAT_PTR;
5
5               DO
6                   BEGIN
6
6                   DO
7                       BEGIN
7                       CHAR = GC;          ! Get next character
7                       NVAL = .NVAL + 1;
6                       END
6                   WHILE .CHAR NEQ '''';
6
6                   CHAR = GC;
5                   END
5               WHILE .CHAR EQL '''';
5
5               FORMAT_PTR = .P;
5
5               IF (NVAL = P = .NVAL - 1) EQL 0 THEN ERROR (ERRZLSTR);
5
5               TYPE = 1;
5               PHASE = 1;
5               NSAVE ();
5               REDUCE (HCODE);
5
5               DECR I FROM .P TO 1 DO
6                   BEGIN
6
6                   IF (CHAR = GC) EQL '''' THEN GC;
6
```

```
;   516      0579  6                          PUTBYT (.CHAR);
;   517      0580  5                          END;
;   518      0581  5
;   519      0582  5                      CHAR = GC;
;   520      0583  4                      END;
;   521      0584  4
;   522      0585  4                  [14] :
;   523      0586  4                      ! 14 - LETTER A
;   524      0587  4                      !
;   525      0588  4                      DEFER (ACODE, 1);
;   526      0589  4
;   527      0590  4                  [15] :
;   528      0591  4                      ! 15 - Letter B
;   529      0592  4                      !
;   530      0593  5                      BEGIN
;   531      0594  5                      UNDEFER ();
;   532      0595  5
;   533      0596  5                      SELECTONE (CHAR = GNB) OF
;   534      0597  5                          SET
;   535      0598  5
;   536      0599  5                          ['N'] :
;   537      0600  5                              PUTBYT (BNCODE);
;   538      0601  5
;   539      0602  5                          ['Z'] :
;   540      0603  5                              PUTBYT (BZCODE);
;   541      0604  5
;   542      0605  5                          [OTHERWISE] :
;   543      0606  6                              BEGIN
;   544      0607  6                              ERROR (ERRFMTCHAR);
;   545      0608  5                              END;
;   546      0609  5                          TES;
;   547      0610  5
;   548      0611  4                      END;
;   549      0612  4
;   550      0613  4                  [16] :
;   551      0614  4                      ! 16 - LETTER D
;   552      0615  4                      !
;   553      0616  4                      DEFER (DCODE, 2);
;   554      0617  4
;   555      0618  4                  [17] :
;   556      0619  4                      ! 17 - LETTER E
;   557      0620  4                      !
;   558      0621  4
;   559      0622  4                      !+
;   560      0623  4                      ! If the third parameter of an edit type that allows four
;   561      0624  4                      ! parameters has been seen, then E is an exponent marker,
;   562      0625  4                      ! otherwise an edit specifier.
;   563      0626  4                      !-
;   564      0627  4
;   565      0628  4                      IF .PHASE EQL 2 AND .FCOUNT EQL 3 THEN NSAVE () ELSE DEFER (ECODE, 3);
;   566      0629  4
;   567      0630  4                  [18] :
;   568      0631  4                      ! 18 - LETTER F
;   569      0632  4                      !
;   570      0633  4                      DEFER (FCODE, 2);
;   571      0634  4
;   572      0635  4                  [19] :
```

```
:  573      0636  4                    ! 19 - LETTER G
:  574      0637  4                    !
:  575      0638  4                    DEFER (GCODE, 3);
:  576      0639  4
:  577      0640  4                [20] :
:  578      0641  4                    ! 20 - LETTER H
:  579      0642  4                    !
:  580      0643  5                    BEGIN
:  581      0644  5
:  582      0645  5                    LOCAL
:  583      0646  5                        P;
:  584      0647  5
:  585      0648  5                    NZERO ();
:  586      0649  5
:  587      0650  5                    IF .TYPE LSS 0 THEN ERROR (ERRFMTCHAR);
:  588      0651  5
:  589      0652  5                    IF .TYPE EQL 0 THEN (NVAL = 1; TYPE = 1);
:  590      0653  5
:  591      0654  5                    IF (P = .NVAL) EQL 0 THEN ERROR (ERRZLSTR);
:  592      0655  5
:  593      0656  5                    PHASE = 1;
:  594      0657  5                    NSAVE ();
:  595      0658  5                    REDUCE (HCODE);
:  596      0659  5
:  597      0660  5                    DECR I FROM .P TO 1 DO
:  598      0661  6                        BEGIN
:  599      0662  6
:  600      0663  6                        CHAR = GC;
:  601      0664  6
:  602      0665  6                        PUTBYT (.CHAR);
:  603      0666  5                        END;
:  604      0667  5
:  605      0668  5                    CHAR = 0;
:  606      0669  4                    END;
:  607      0670  4
:  608      0671  4                [21] :
:  609      0672  4                    ! 21 - LETTER I
:  610      0673  4                    !
:  611      0674  4                    DEFER (ICODE, 2);
:  612      0675  4
:  613      0676  4                [22] :
:  614      0677  4                    ! 22 - LETTER L
:  615      0678  4                    !
:  616      0679  4                    DEFER (LCODE, 1);
:  617      0680  4
:  618      0681  4                [23] :
:  619      0682  4                    ! 23 - LETTER O
:  620      0683  4                    !
:  621      0684  4                    DEFER (OCODE, 2);
:  622      0685  4
:  623      0686  4                [24] :
:  624      0687  4                    ! 24 - LETTER P
:  625      0688  4                    !
:  626      0689  5                    BEGIN
:  627      0690  5                    NZERO ();
:  628      0691  5
:  629      0692  5                    IF .TYPE EQL 0
```

```
    THEN
        BEGIN

        IF .SIGN NEQ 0 THEN ERROR (ERRFMTNUMB);

        END;

    IF .SIGN LSS 0 THEN NVAL = -.NVAL;

    SIGN = 0;
    PHASE = 1;
    NSAVE ();
    REDUCE (PCODE);
    END;

[25] :
    ! 25 - LETTER Q
    !
    BEGIN
    UNDEFER ();
    PUTBYT (QCODE);
    END;

[26] :
    ! 26 - Letter S
    !
    BEGIN
    UNDEFER ();

    SELECTONE (CHAR = GNB) OF
        SET

        ['P'] :
            PUTBYT (SPCODE);

        ['S'] :
            PUTBYT (SSCODE);

        [OTHERWISE] :
            BEGIN
            PUTBYT (SCODE);
            FORMAT_PTR = .FORMAT_PTR - 1;
            CHAR = 'S';
            END;
        TES;

    END;

[27] :
    ! 27 - LETTER T
    !
    BEGIN
    UNDEFER ();

    SELECTONE (CHAR = GNB) OF
        SET

```

```
:   687        0750  5                        ['L'] :
:   688        0751  5                            DEFER (TLCODE, 1);
:   689        0752  5
:   690        0753  5                        ['R'] :
:   691        0754  5                            DEFER (TRCODE, 1);
:   692        0755  5
:   693        0756  5                        [OTHERWISE] :
:   694        0757  6                            BEGIN
:   695        0758  6                            DEFER (TCODE, 1);
:   696        0759  6                            FORMAT_PTR = .FORMAT_PTR - 1;
:   697        0760  6                            CHAR = 'T';
:   698        0761  5                            END;
:   699        0762  5                        TES;
:   700        0763  5
:   701        0764  4                    END;
:   702        0765  4
:   703        0766  4                [28] :
:   704        0767  4                    ! 28 - LETTER X
:   705        0768  4                    !
:   706        0769  5                    BEGIN
:   707        0770  5                    NZERO ();
:   708        0771  5
:   709        0772  5                    IF .TYPE EQL 0
:   710        0773  5                    THEN
:   711        0774  6                        BEGIN
:   712        0775  6                        TYPE = 1;
:   713        0776  6                        NVAL = 1;
:   714        0777  5                        END;
:   715        0778  5
:   716        0779  5                    PHASE = 1;
:   717        0780  5                    NSAVE ();
:   718        0781  5                    REDUCE (TRCODE);                ! X is same as TR
:   719        0782  5                                                    ! Old X is no longer used.
:   720        0783  4                    END;
:   721        0784  4
:   722        0785  4                [29] :
:   723        0786  4                    ! 29 - LETTER Z
:   724        0787  4                    !
:   725        0788  4                    DEFER (ZCODE, 2)
:   726        0789  4                TES;
:   727        0790  4
:   728        0791  4            CPRIME = .CHAR;
:   729        0792  3            END;
:   730        0793  3
:   731        0794  3        !+
:   732        0795  3        ! Put end of format code.
:   733        0796  3        ! Then return size and location of format buffer.
:   734        0797  3        !-
:   735        0798  3
:   736        0799  3        PUTBYT (ENDFMT);
:   737        0800  3        ALLOCATED_LEN [0] = .FMT_BUF_SIZ;
:   738        0801  3        ALLOCATED_ADR [0] = .FMT_BUF_BEG;
:   739        0802  2        END;
:   740        0803  2
:   741        0804  1    END;
```

```
                                                                        .TITLE  FOR$FMTCP FORTRAN OBJECT TIME FORMAT COMPILER
                                                                        .IDENT  \2-006\

                                                                        .PSECT  _FOR$CODE,NOWRT,  SHR,  PIC,2

00  00  00  00  00  00  00  00  00  00  00  00  00  00  01  00000 P.AAA:  .BYTE   1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, -  ;
00  00  00  00  00  00  00  00  00  00  00  00  00  00  00  0000F                  0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, -  ;
0B  03  00  07  06  0D  00  00  09  00  00  00  00  00  00  0001E                  0, 0, 0, 0, 0, 0, 0, 0, 9, 0, 0, 13, 6, -    ;
00  0A  05  05  05  05  05  05  05  05  05  05  08  0C  02  0002D                  7, 0, 3, 11, 2, 12, 8, 5, 5, 5, 5, 5, 5, -   ;
00  15  14  13  12  11  10  00  0F  0E  00  00  00  00  04  0003C                  5, 5, 5, 5, 10, 0, 4, 0, 0, 0, 0, 14, 15, -  ;
00  1C  00  00  00  1B  1A  00  19  18  17  00  00  16  00  0004B                  0, 16, 17, 18, 19, 20, 21, 0, 0, 22, 0, -    ;
                                                            1D  0005A                  0, 23, 24, 25, 0, 26, 27, 0, 0, 0, 28, 0, -  ;
                                                                                   29                                           ;

                                                              K_CLASS_TAB_MAX=     132
                                                              CLASS=               P.AAA
                                                              TOPLVL=              1
                                                              LPAREN=              2
                                                              RPAREN=              3
                                                              ENDFMT=              4
                                                              SLASH=               5
                                                              DOLLAR=              6
                                                              COLON=               7
                                                              SCODE=               9
                                                              SPCODE=              10
                                                              SSCODE=              11
                                                              PCODE=               12
                                                              TCODE=               13
                                                              XCODE=               14
                                                              HCODE=               15
                                                              BNCODE=              16
                                                              BZCODE=              17
                                                              TLCODE=              18
                                                              TRCODE=              19
                                                              QCODE=               20
                                                              ACODE=               21
                                                              LCODE=               22
                                                              OCODE=               23
                                                              ICODE=               24
                                                              ZCODE=               25
                                                              FCODE=               30
                                                              ECODE=               31
                                                              GCODE=               32
                                                              DCODE=               33
                                                              IOZOFFSET=           3
                                                              EGOFFSET=            3
                                                              OFFSET=              20
                                                                        .EXTRN  FOR$GET_VM, FOR$FREE_VM
                                                                        .EXTRN  FOR$SIGNAL_STO

                                                        0FFC 00000      .ENTRY  FOR$FMT_COMPIL, Save R2,R3,R4,R5,R6,R7,R8,-; 0294
                                                                                R9,R10,R11                                  ;
                                   58      0000V   CF   9E 00002        MOVAB   PUTBYT, R8                                  ;
                                   57      0000V   CF   9E 00007        MOVAB   NSAVE, R7                                   ;
                                   56      0000V   CF   9E 0000C        MOVAB   UNDEFER, R6                                 ;
                                   5E         B4   AE   9E 00011        MOVAB   -76(SP), SP                                 ;
                                   5B              6E   9E 00015        MOVAB   FMTDAT, SAVVAL                              ; 0382
```

```
                                         5A       10    AE  9E 00018       MOVAB   FMTDAT+16, SAVTYP                       ; 0383
                                         59       20    AE  9E 0001C       MOVAB   FMTDAT+32, PTR                          ; 0384
  004C   8F            00                6E               00  2C 00020       MOVC5   #0, (SP), #0, #76, FMTDAT               ; 0388
                                                          6E     00027                                                     ;
                                         7E     0100    8F  3C 00028       MOVZWL  #256, -(SP)                             ; 0389
                                  00000000G    00    01  FB 0002D       CALLS   #1, FOR$$GET_VM                         ;
                                         40    AE       50  D0 00034       MOVL    R0, FMT_BUF_BEG                         ;
                                         48    AE  0100 8F  3C 00038       MOVZWL  #256, FMT_BUF_SIZ                       ; 0390
                                         44    AE       28  D0 0003E       MOVL    #40, CPRIME                             ; 0391
                                               54    04 AC  D0 00042       MOVL    FORMAT, FORMAT_PTR                      ; 0392
                       64        FFFF          8F       20  3B 00046       SKPC    #32, #65535, (FORMAT_PTR)               ; 0393
                                                        02  12 0004C       BNEQ    1$                                      ;
                                                        51  D4 0004E       CLRL    R1                                      ;
                                               54       51  D0 00050 1$:   MOVL    R1, FORMAT_PTR                          ;
                                                        7E  13 00053       BEQL    6$                                      ; 0395
                                               50       84  9A 00055       MOVZBL  (FORMAT_PTR)+, R0                       ;
                                               28       50  91 00058       CMPB    R0, #40                                 ;
                                                        76  12 0005B       BNEQ    6$                                      ;
                       64        FFFF          8F       20  3B 0005D 2$:   SKPC    #32, #65535, (FORMAT_PTR)               ; 0403
                                                        02  12 00063       BNEQ    3$                                      ;
                                                        51  D4 00065       CLRL    R1                                      ;
                                               54       51  D0 00067 3$:   MOVL    R1, FORMAT_PTR                          ;
                                                        67  13 0006A       BEQL    6$                                      ;
                                               50       84  9A 0006C       MOVZBL  (FORMAT_PTR)+, C                        ;
                                 00000061      8F       50  D1 0006F       CMPL    C, #97                                  ;
                                                        0C  1F 00076       BLSSU   4$                                      ;
                                 0000007A      8F       50  D1 00078       CMPL    C, #122                                 ;
                                                        03  1A 0007F       BGTRU   4$                                      ;
                                               50       20  C2 00081       SUBL2   #32, R0                                 ;
                                               52       50  D0 00084 4$:   MOVL    C, CHAR                                 ;
                                 00000084      8F       52  D1 00087       CMPL    CHAR, #132                              ; 0405
                                                        43  1A 0008E       BGTRU   6$                                      ;
                       1D                      00  FF10 CF42  8F 00090       CASEB   CLASS[CHAR], #0, #29                    ; 0407
       004F           003F                   0290       0290     00097 5$.   .WORD   66$-5$,-                                ;
       0095           0070                   005F       0290     0009F               66$-5$,-                                ;
       00BA           00B2                   00AB       00A4     000A7               7$-5$,-                                 ;
       0135           012F                   00DB       00BF     000AF               8$-5$,-                                 ;
       01A0           019A                   0183       017D     000B7               66$-5$,-                                ;
       01F1           01EB                   01E5       01A6     000BF               9$-5$,-                                 ;
       027E           0227                   0220       01F8     000C7               10$-5$,-                                ;
                                             0306       02E4     000CF               12$-5$,-                                ;
                                                                                     14$-5$,-                                ;
                                                                                     15$-5$,-                                ;
                                                                                     16$-5$,-                                ;
                                                                                     18$-5$,-                                ;
                                                                                     20$-5$,-                                ;
                                                                                     23$-5$,-                                ;
                                                                                     29$-5$,-                                ;
                                                                                     30$-5$,-                                ;
                                                                                     35$-5$,-                                ;
                                                                                     36$-5$,-                                ;
                                                                                     40$-5$,-                                ;
                                                                                     41$-5$,-                                ;
                                                                                     43$-5$,-                                ;
                                                                                     50$-5$,-                                ;
                                                                                     51$-5$,-                                ;
                                                                                     52$-5$,-                                ;
```

```
                                                       54$-5$,-                            :
                                                       57$-5$,-                            :
                                                       58$-5$,-                            :
                                                       64$-5$,-                            :
                                                       72$-5$,-                            :
                                                       75$-5$                              :
                         0251  31 000D3 6$:     BRW     66$                                 ; 0413
                     30    AE  D5 000D6 7$:     TSTL    SIGN                                ; 0425
                           F8  12 000D9         BNEQ    6$                                  :
                     38    AE  D5 000DB         TSTL    TYPE                                :
                           F3  12 000DE         BNEQ    6$                                  :
            30  AE             01  CE 000E0         MNEGL   #1, SIGN                            ; 0427
                           6E  11 000E4         BRB     19$                                 ; 0407
                     30    AE  D5 000E6 8$:     TSTL    SIGN                                ; 0435
                           E8  12 000E9         BNEQ    6$                                  :
                     38    AE  D5 000EB         TSTL    TYPE                                :
                           E3  12 000EE         BNEQ    6$                                  :
            30  AE             01  D0 000F0         MOVL    #1, SIGN                            ; 0437
                           5E  11 000F4         BRB     19$                                 ; 0407
            38  AE             01  D0 000F6 9$:     MOVL    #1, TYPE                            ; 0449
50          34  AE             0A  C5 000FA         MULL3   #10, NVAL, R0                       ; 0450
            34  AE      D0 A240  9E 000FF         MOVAB   -48(CHAR)[R0], NVAL                 :
                           4D  11 00105         BRB     19$                                 ; 0407
         0000V  CF             00  FB 00107 10$:    CALLS   #0, NZERO                           ; 0457
                67             00  FB 0010C         CALLS   #0, NSAVE                           ; 0458
                     2C    AE  D5 0010F         TSTL    NEST                                ; 0460
                           05  12 00112         BNEQ    11$                                 :
                           01  DD 00114         PUSHL   #1                                  :
                68             01  FB 00116         CALLS   #1, PUTBYT                          :
50          2C  AE             01  C1 00119 11$:    ADDL3   #1, NEST, R0                        ; 0462
            2C  AE             50  D0 0011E         MOVL    R0, NEST                            :
                08             50  D1 00122         CMPL    R0, #8                              :
                           AC  14 00125         BGTR    6$                                  :
                           02  DD 00127         PUSHL   #2                                  ; 0464
                         026A  31 00129         BRW     74$                                 :
                66             00  FB 0012C 12$:    CALLS   #0, UNDEFER                         ; 0481
                     2C    AE  D7 0012F         DECL    NEST                                ; 0483
                           03  18 00132         BGEQ    13$                                 :
                         0276  31 00134         BRW     78$                                 :
                           03  DD 00137 13$:    PUSHL   #3                                  ; 0485
                           13  11 00139         BRB     17$                                 :
                66             00  FB 0013B 14$:    CALLS   #0, UNDEFER                         ; 0492
                           05  DD 0013E         PUSHL   #5                                  ; 0493
                           0C  11 00140         BRB     17$                                 :
                66             00  FB 00142 15$:    CALLS   #0, UNDEFER                         ; 0500
                           06  DD 00145         PUSHL   #6                                  ; 0501
                           05  11 00147         BRB     17$                                 :
                66             00  FB 00149 16$:    CALLS   #0, UNDEFER                         ; 0508
                           07  DD 0014C         PUSHL   #7                                  ; 0509
                         01B2  31 0014E 17$:    BRW     62$                                 :
                66             00  FB 00151 18$:    CALLS   #0, UNDEFER                         ; 0523
                           6E  11 00154 19$:    BRB     28$                                 ; 0407
                     38    AE  D5 00156 20$:    TSTL    TYPE                                ; 0531
                           0B  13 00159         BEQL    21$                                 :
                     30    AE  D5 0015B         TSTL    SIGN                                ; 0533
                           06  12 0015E         BNEQ    21$                                 :
                02   24    AE  D1 00160         CMPL    FCOUNT, #2                          ; 0535
```

```
                               03  18 00164          BGEQ     22$                                     :
                             01BE  31 00166 21$:     BRW      66$                                     :
                  01    28     AE  D1 00169 22$:     CMPL     PHASE, #1                               :
                               F7  12 0016D          BNEQ     21$                                     :
                             00B4  31 0016F          BRW      37$                                     :
                  66           00  FB 00172 23$:     CALLS    #0, UNDEFER                             : 0548
                  53           54  D0 00175          MOVL     FORMAT_PTR, P                           : 0549
                  52           84  9A 00178 24$:     MOVZBL   (FORMAT_PTR)+, CHAR                     : 0556
                        34     AE  D6 0017B          INCL     NVAL                                    : 0557
                  27           52  D1 0017E          CMPL     CHAR, #39                               : 0559
                               F5  12 00181          BNEQ     24$                                     :
                  52           84  9A 00183          MOVZBL   (FORMAT_PTR)+, CHAR                     : 0561
                  27           52  D1 00186          CMPL     CHAR, #39                               : 0563
                               ED  13 00189          BEQL     24$                                     :
                  54           53  D0 0018B          MOVL     P, FORMAT_PTR                           : 0565
   53        34   AE           01  C3 0018E          SUBL3    #1, NVAL, P                             : 0567
             34   AE           53  D0 00193          MOVL     P, NVAL                                 :
                               CD  13 00197          BEQL     21$                                     :
             38   AE           01  D0 00199          MOVL     #1, TYPE                                : 0569
             28   AE           01  D0 0019D          MOVL     #1, PHASE                               : 0570
                  67           00  FB 001A1          CALLS    #0, NSAVE                               : 0571
                               0F  DD 001A4          PUSHL    #15                                     : 0572
          0000V   CF           01  FB 001A6          CALLS    #1, REDUCE                              :
                               53  D6 001AB          INCL     I                                       : 0574
                               0F  11 001AD          BRB      27$                                     :
                  52           84  9A 001AF 25$:     MOVZBL   (FORMAT_PTR)+, CHAR                     : 0577
                  27           52  D1 001B2          CMPL     CHAR, #39                               :
                               02  12 001B5          BNEQ     26$                                     :
                               54  D6 001B7          INCL     FORMAT_PTR                              :
                               52  DD 001B9 26$:     PUSHL    CHAR                                    : 0579
                  68           01  FB 001BB          CALLS    #1, PUTBYT                              :
                  EE           53  F5 001BE 27$:     SOBGTR   I, 25$                                  : 0574
                  52           84  9A 001C1          MOVZBL   (FORMAT_PTR)+, CHAR                     : 0582
                               63  11 001C4 28$:     BRB      38$                                     : 0407
                               01  DD 001C6 29$:     PUSHL    #1                                      : 0588
                               15  DD 001C8          PUSHL    #21                                     :
                               6F  11 001CA          BRB      42$                                     :
                  66           00  FB 001CC 30$:     CALLS    #0, UNDEFER                             : 0594
   64      FFFF   8F           20  3B 001CF          SKPC     #32, #65535, (FORMAT_PTR)               : 0596
                               02  12 001D5          BNEQ     31$                                     :
                               51  D4 001D7          CLRL     R1                                      :
                  54           51  D0 001D9 31$:     MOVL     R1, FORMAT_PTR                          :
                               69  13 001DC          BEQL     44$                                     :
                  50           84  9A 001DE          MOVZBL   (FORMAT_PTR)+, C                        :
       00000061   8F           50  D1 001E1          CMPL     C, #97                                  :
                               0C  1F 001E8          BLSSU    32$                                     :
       0000007A   8F           50  D1 001EA          CMPL     C, #122                                 :
                               03  1A 001F1          BGTRU    32$                                     :
                  50           20  C2 001F3          SUBL2    #32, R0                                 :
                  52           50  D0 001F6 32$:     MOVL     C, CHAR                                 :
       0000004E   8F           52  D1 001F9          CMPL     CHAR, #78                               : 0599
                               04  12 00200          BNEQ     33$                                     :
                               10  DD 00202          PUSHL    #16                                     : 0600
                               0B  11 00204          BRB      34$                                     :
       0000005A   8F           52  D1 00206 33$:     CMPL     CHAR, #90                               : 0602
                               38  12 0020D          BNEQ     44$                                     :
                               11  DD 0020F          PUSHL    #17                                     : 0603
```

```
                              00EF  31 00211 34$:  BRW     62$                          ;
                                02  DD 00214 35$:  PUSHL   #2                           ; 0616
                                21  DD 00216       PUSHL   #33                          ;
                                72  11 00218       BRB     53$                          ;
            02          28      AE  D1 0021A 36$:  CMPL    PHASE, #2                    ; 0628
                                0B  12 0021E       BNEQ    39$                          ;
            03          24      AE  D1 00220       CMPL    FCOUNT, #3                   ;
                                05  12 00224       BNEQ    39$                          ;
            67                  00  FB 00226 37$:  CALLS   #0, NSAVE                    ;
                                4E  11 00229 38$:  BRB     49$                          ;
                                03  DD 0022B 39$:  PUSHL   #3                           ;
                                1F  DD 0022D       PUSHL   #31                          ;
                                5B  11 0022F       BRB     53$                          ;
                                02  DD 00231 40$:  PUSHL   #2                           ; 0633
                                1E  DD 00233       PUSHL   #30                          ;
                                55  11 00235       BRB     53$                          ;
                                03  DD 00237 41$:  PUSHL   #3                           ; 0638
                                20  DD 00239       PUSHL   #32                          ;
                                4F  11 0023B 42$:  BRB     53$                          ;
      0000V CF                  00  FB 0023D 43$:  CALLS   #0, NZERO                    ; 0648
                        38      AE  D5 00242       TSTL    TYPE                         ; 0650
                                03  18 00245       BGEQ    45$                          ;
                              00DD  31 00247 44$:  BRW     66$                          ;
                                08  12 0024A 45$:  BNEQ    46$                          ; 0652
         34 AE                  01  D0 0024C       MOVL    #1, NVAL                     ;
         38 AE                  01  D0 00250       MOVL    #1, TYPE                     ;
            53          34      AE  D0 00254 46$:  MOVL    NVAL, P                      ; 0654
                                ED  13 00258       BEQL    44$                          ;
         28 AE                  01  D0 0025A       MOVL    #1, PHASE                    ; 0656
            67                  00  FB 0025E       CALLS   #0, NSAVE                    ; 0657
                                0F  DD 00261       PUSHL   #15                          ; 0658
      0000V CF                  01  FB 00263       CALLS   #1, REDUCE                   ;
                                53  D6 00268       INCL    I                            ; 0660
                                08  11 0026A       BRB     48$                          ;
            52                  84  9A 0026C 47$:  MOVZBL  (FORMAT_PTR)+, CHAR          ; 0663
                                52  DD 0026F       PUSHL   CHAR                         ; 0665
            68                  01  FB 00271       CALLS   #1, PUTBYT                   ;
            F5                  53  F5 00274 48$:  SOBGTR  I, 47$                       ; 0660
                                52  D4 00277       CLRL    CHAR                         ; 0668
                              012A  31 00279 49$:  BRW     77$                          ; 0407
                                02  DD 0027C 50$:  PUSHL   #2                           ; 0674
                                18  DD 0027E       PUSHL   #24                          ;
                                0A  11 00280       BRB     53$                          ;
                                01  DD 00282 51$:  PUSHL   #1                           ; 0679
                                16  DD 00284       PUSHL   #22                          ;
                                04  11 00286       BRB     53$                          ;
                                02  DD 00288 52$:  PUSHL   #2                           ; 0684
                                17  DD 0028A       PUSHL   #23                          ;
                              0112  31 0028C 53$:  BRW     76$                          ;
      0000V CF                  00  FB 0028F 54$:  CALLS   #0, NZERO                    ; 0690
                        38      AE  D5 00294       TSTL    TYPE                         ; 0692
                                05  12 00297       BNEQ    55$                          ;
                        30      AE  D5 00299       TSTL    SIGN                         ; 0696
                                A9  12 0029C       BNEQ    44$                          ;
                        30      AE  D5 0029E 55$:  TSTL    SIGN                         ; 0700
                                05  18 002A1       BGEQ    56$                          ;
         34 AE          34      AE  CE 002A3       MNEGL   NVAL, NVAL                   ;
```

```
                                 30   AE   D4 002A8 56$:      CLRL     SIGN                                    ; 0702
                     28   AE          01   D0 002AB           MOVL     #1, PHASE                               ; 0703
                          67          00   FB 002AF           CALLS    #0, NSAVE                               ; 0704
                                      0C   DD 002B2           PUSHL    #12                                     ; 0705
                                    00DF   31 002B4           BRW      74$                                     ;
                          66          00   FB 002B7 57$:      CALLS    #0, UNDEFER                             ; 0712
                                      14   DD 002BA           PUSHL    #20                                     ; 0713
                                      45   11 002BC           BRB      62$                                     ;
                          66          00   FB 002BE 58$:      CALLS    #0, UNDEFER                             ; 0720
             64     FFFF  8F          20   3B 002C1           SKPC     #32, #65535, (FORMAT_PTR)               ; 0722
                                      02   12 002C7           BNEQ     59$                                     ;
                                      51   D4 002C9           CLRL     R1                                      ;
                          54          51   D0 002CB 59$:      MOVL     R1, FORMAT_PTR                          ;
                                      57   13 002CE           BEQL     66$                                     ;
                          50          84   9A 002D0           MOVZBL   (FORMAT_PTR)+, C                        ;
                00000061  8F          50   D1 002D3           CMPL     C, #97                                  ;
                                      0C   1F 002DA           BLSSU    60$                                     ;
                0000007A  8F          50   D1 002DC           CMPL     C, #122                                 ;
                                      03   1A 002E3           BGTRU    60$                                     ;
                          50          20   C2 002E5           SUBL2    #32, R0                                 ;
                          52          50   D0 002E8 60$:      MOVL     C, CHAR                                 ;
                00000050  8F          52   D1 002EB           CMPL     CHAR, #80                               ; 0725
                                      04   12 002F2           BNEQ     61$                                     ;
                                      0A   DD 002F4           PUSHL    #10                                     ; 0726
                                      0B   11 002F6           BRB      62$                                     ;
                00000053  8F          52   D1 002F8 61$:      CMPL     CHAR, #83                               ; 0728
                                      07   12 002FF           BNEQ     63$                                     ;
                                      0B   DD 00301           PUSHL    #11                                     ; 0729
                          68          01   FB 00303 62$:      CALLS    #1, PUTBYT                              ;
                                      71   11 00306           BRB      71$                                     ;
                                      09   DD 00308 63$:      PUSHL    #9                                      ; 0733
                          68          01   FB 0030A           CALLS    #1, PUTBYT                              ;
                                      54   D7 0030D           DECL     FORMAT_PTR                              ; 0734
                          52     53   8F   9A 0030F           MOVZBL   #83, CHAR                               ; 0735
                                      64   11 00313           BRB      71$                                     ; 0407
                          66          00   FB 00315 64$:      CALLS    #0, UNDEFER                             ; 0745
             64     FFFF  8F          20   3B 00318           SKPC     #32, #65535, (FORMAT_PTR)               ; 0747
                                      02   12 0031E           BNEQ     65$                                     ;
                                      51   D4 00320           CLRL     R1                                      ;
                          54          51   D0 00322 65$:      MOVL     R1, FORMAT_PTR                          ;
                                      0A   12 00325           BNEQ     67$                                     ;
                                      3E   DD 00327 66$:      PUSHL    #62                                     ;
                00000000G 00          01   FB 00329           CALLS    #1, FOR$$SIGNAL_STO                     ;
                                           04 00330           RET                                              ;
                          50          84   9A 00331 67$:      MOVZBL   (FORMAT_PTR)+, C                        ;
                00000061  8F          50   D1 00334           CMPL     C, #97                                  ;
                                      0C   1F 0033B           BLSSU    68$                                     ;
                0000007A  8F          50   D1 0033D           CMPL     C, #122                                 ;
                                      03   1A 00344           BGTRU    68$                                     ;
                          50          20   C2 00346           SUBL2    #32, R0                                 ;
                          52          50   D0 00349 68$:      MOVL     C, CHAR                                 ;
                0000004C  8F          52   D1 0034C           CMPL     CHAR, #76                               ; 0750
                                      06   12 00353           BNEQ     69$                                     ;
                                      01   DD 00355           PUSHL    #1                                      ; 0751
                                      12   DD 00357           PUSHL    #18                                     ;
                                      46   11 00359           BRB      76$                                     ;
                00000052  8F          52   D1 0035B 69$:      CMPL     CHAR, #82                               ; 0753
```

```
                       06 12 00362          BNEQ     70$                                         ;
                       01 DD 00364          PUSHL    #1                                          ; 0754
                       13 DD 00366          PUSHL    #19                                         ;
                       37 11 00368          BRB      76$                                         ;
                       01 DD 0036A 70$:     PUSHL    #1                                          ; 0758
                       0D DD 0036C          PUSHL    #13                                         ;
0000V   CF             02 FB 0036E          CALLS    #2, DEFER                                   ;
                       54 D7 00373          DECL     FORMAT_PTR                                  ; 0759
        52      54     8F 9A 00375          MOVZBL   #84, CHAR                                   ; 0760
                       2B 11 00379 71$:     BRB      77$                                         ; 0407
0000V   CF             00 FB 0037B 72$:     CALLS    #0, NZERO                                   ; 0770
                38     AE D5 00380          TSTL     TYPE                                        ; 0772
                       08 12 00383          BNEQ     73$                                         ;
   38   AE             01 D0 00385          MOVL     #1, TYPE                                    ; 0775
   34   AE             01 D0 00389          MOVL     #1, NVAL                                    ; 0776
   28   AE             01 D0 0038D 73$:     MOVL     #1, PHASE                                   ; 0779
        67             00 FB 00391          CALLS    #0, NSAVE                                   ; 0780
                       13 DD 00394          PUSHL    #19                                         ; 0781
0000V   CF             01 FB 00396 74$:     CALLS    #1, REDUCE                                  ;
                       09 11 0039B          BRB      77$                                         ; 0407
                       02 DD 0039D 75$:     PUSHL    #2                                          ; 0788
                       19 DD 0039F          PUSHL    #25                                         ;
0000V   CF             02 FB 003A1 76$:     CALLS    #2, DEFER                                   ;
   44   AE             52 D0 003A6 77$:     MOVL     CHAR, CPRIME                                ; 0791
                     FCB0 31 003AA          BRW      2$                                          ; 0401
                       04 DD 003AD 78$:     PUSHL    #4                                          ; 0799
        68             01 FB 003AF          CALLS    #1, PUTBYT                                  ;
   08   BC      48     AE B0 003B2          MOVW     FMT_BUF_SIZ, @ALLOCATED_LEN                 ; 0800
   0C   BC      40     AE D0 003B7          MOVL     FMT_BUF_BEG, @ALLOCATED_ADR                 ; 0801
                          04 003BC          RET                                                  ; 0804

; Routine Size:  957 bytes,    Routine Base:  _FOR$CODE + 005B


;  742          0805  1
```

```
  1 ROUTINE REDUCE (C) : CALL_G3 NOVALUE =
  1
  1 !++
  1 ! FUNCTIONAL DESCRIPTION:
  1 !
  1 !       Output the compiled text corresponding to the format item
  1 !       just scanned
  1 !
  1 ! FORMAL PARAMETERS:
  1 !
  1 !       C       - format code
  1 !
  1 ! IMPLICIT INPUTS:
  1 !
  1 !       FMTDAT array
  1 !
  1 !
  1 ! IMPLICIT OUTPUTS:
  1 !
  1 !       Compiled text output through argument
  1 !       Reinitialization for another format item (per format code related
  1 !       FMTDAT array updated)
  1 !
  1 ! ROUTINE VALUE:
  1 !
  1 !       NONE
  1 !
  1 ! SIDE EFFECTS:
  1 !
  1 !       SIGNAL_STOPs FOR$SYNERRFOR (62="SYNTAX ERROR IN FORMAT")
  1 !
  1 !--
  1
  2     BEGIN
  2     EXT_REG;                                ! Declare external registers
  2
  2     MACRO
M 2         ALLBITS =
  2 0,0,32,0%,                                  ! WHOLE WORD
M 2         RSBITS =
  2 0,0,2,0%,                                   ! REP COUNT SIZE
M 2         SBIT =
  2 0,2,1,0%,                                   ! W FIELD SIZE
M 2         XBIT =
  2 0,7,1,0%;                                   ! REPETITION COUNT EXISTS
  2
  2     MACRO
  2         ! Macro to pack flags for table FMT_PRM_LIMITS
  2         !
M 2         FLAGBITS (F0, F1, F2, F3, F4, F5, F6, F7) =
M 2
M 2             (F0) OR (F1)^1 OR (F2)^2 OR (F3)^3 OR
  2             (F4)^4 OR (F5)^5 OR (F6)^6 OR (F7)^7 %,
  2         ! Field definitions for table FMT_PRM_LIMITS
  2         !
M 2         FDFLTOK =
  2 0,1,0%,                                     ! Allows defaults if no parameters follow
```

```
M 2            FMIN2 =
  2 1,1,0%,                                       ! Does not allow W without D
M 2            F1OR2 =
  2 2,1,0%,                                       ! Allows W or W.M
M 2            F2OR3 =
  2 3,1,0%,                                       ! Allows E type exponent
M 2            F1EXACT =
  2 4,1,0%,                                       ! Must have exactly one parameter
  2 ! Macro to allow abbreviated reference to table FMT_PRM_LIMITS
  2            !
M 2            FMT_CHECK (PO, SO, EO) =
  2                .FMT_PRM_LIMITS[.C - TCODE, (PO), (SO), (EO)] %;
  2
  2        BIND
  2            ! Table of default options for parameters after a format edit
  2            ! specifier.  Each row corresponds to an edit type.
  2            ! The bits are defined above.  Edit specifiers not in the table
  2            ! (S, SS, SP, P, '(' ) do not allow following parameters.
  2            !
  2            FMT_PRM_LIMITS = UPLIT BYTE(
  2                FLAGBITS(0,  0,  0,  0,  1,  0,  0,  0),    ! TCODE
  2                FLAGBITS(0,  0,  0,  0,  0,  0,  0,  0),    ! XCODE
  2                FLAGBITS(0,  0,  0,  0,  0,  0,  0,  0),    ! HCODE
  2                FLAGBITS(0,  0,  0,  0,  0,  0,  0,  0),    ! BNCODE
  2                FLAGBITS(0,  0,  0,  0,  0,  0,  0,  0),    ! BZCODE
  2                FLAGBITS(0,  0,  0,  0,  1,  0,  0,  0),    ! TLCODE
  2                FLAGBITS(0,  0,  0,  0,  1,  0,  0,  0),    ! TRCODE
  2                FLAGBITS(0,  0,  0,  0,  0,  0,  0,  0),    ! QCODE
  2                FLAGBITS(1,  0,  0,  0,  0,  0,  0,  0),    ! ACODE
  2                FLAGBITS(1,  0,  0,  0,  0,  0,  0,  0),    ! LCODE
  2                FLAGBITS(1,  0,  1,  0,  0,  0,  0,  0),    ! OCODE
  2                FLAGBITS(1,  0,  1,  0,  0,  0,  0,  0),    ! ICODE
  2                FLAGBITS(1,  0,  1,  0,  0,  0,  0,  0),    ! ZCODE
  2                FLAGBITS(0,  0,  0,  0,  0,  0,  0,  0),    ! --
  2                FLAGBITS(0,  0,  0,  0,  0,  0,  0,  0),    ! --
  2                FLAGBITS(0,  0,  0,  0,  0,  0,  0,  0),    ! --
  2                FLAGBITS(0,  0,  0,  0,  0,  0,  0,  0),    ! --
  2                FLAGBITS(1,  1,  0,  0,  0,  0,  0,  0),    ! FCODE
  2                FLAGBITS(1,  1,  0,  1,  0,  0,  0,  0),    ! ECODE
  2                FLAGBITS(1,  1,  0,  1,  0,  0,  0,  0),    ! GCODE
  2                FLAGBITS(1,  1,  0,  1,  0,  0,  0,  0)     ! DCODE
  2                ) : BLOCK [, BYTE];
  2
  2        LOCAL
  2            FC : BLOCK [1],                    ! Format code with modifications
  2            VFEM : BLOCK [1],                  ! VFE mask byte
  2            VFEB;                              ! Mask bit to or in to VFEM
  2
  2        ! If C is zero, there is nothing to reduce
  2        !
  2
  2        IF (FC = .C) NEQ 0
  2        THEN
  3            BEGIN
  3            ! Check whether this is a code which might have to be adjusted for
  3            ! a variable number of parameters
  3            !
```

```

IF .C GEQ TCODE
THEN
    BEGIN
    ! The following block-IF checks for parameter consistency and calculates
    ! the correct format code for formats which allow variable numbers of
    ! parameters.
    !

    IF .SAVTYP [1] EQL 0
    THEN
    ! No parameters are present.  If allowed, adjust format codes to
    ! indicate that defaults are being taken; otherwise, error.
    !
        BEGIN

        IF FMT_CHECK (FDFLTOK)
        THEN
            BEGIN
            FC = .FC + OFFSET;
            SAVTYP [2] = SAVTYP [3] = 0;
            END
        ELSE

            IF FMT_CHECK (F1EXACT) THEN ERROR (ERRFMTNUMB)

        END
    ELSE

        IF .SAVTYP [2] EQL 0
        THEN
        ! W field with no D field.  This is an error for floating point
        ! edit types
        !
            BEGIN

            IF FMT_CHECK (FMIN2)
            THEN
                BEGIN
                ERROR (ERRFMTNUMB);
                END

            END
        ELSE

            IF .SAVTYP [3] EQL 0
            THEN
            ! W and D present, but not E.  Check if this is W.M type and
            ! adjust format code if so.
            !
                BEGIN

                IF FMT_CHECK (F1OR2) THEN FC = .FC + IOZOFFSET

                END
            ELSE
            ! W,D,E present.  If allowed, adjust format code, otherwise error.
```

```
:  915        0977  4               !
:  916        0978  4
:  917        0979  4                  IF FMT_CHECK (F2OR3) THEN FC = .FC + EGOFFSET;
:  918        0980  4
:  919        0981  3         END;
:  920        0982  3
:  921        0983  3      IF .C EQL HCODE AND (.SAVVAL [1] LSS 0 OR .SAVTYP [1] LEQ 0) THEN ERROR (ERRHOLLCNT);
:  922        0984  3
:  923        0985  3      ! Compute the VFE-mask
:  924        0986  3      !
:  925        0987  3      VFEM [ALLBITS] = 0;
:  926        0988  3      ! Compute S and RS fields
:  927        0989  3      !
:  928        0990  3      ! If rep count is absent (SAVTYP[0] = 0), is a VFE, or is 1, then
:  929        0991  3      ! RSBIT = 0; otherwise it is the number of bytes necessary to
:  930        0992  3      ! represent the repetition count.
:  931        0993  3      !
:  932        0994  3
:  933        0995  3      IF .SAVTYP [0] LEQ 0 OR .SAVVAL [0] EQL 1
:  934        0996  3      THEN
:  935        0997  3         VFEM [RSBITS] = 0
:  936        0998  3      ELSE
:  937        0999  3         VFEM [RSBITS] = BYTSIZ (.SAVVAL [0]);
:  938        1000  3
:  939        1001  3      IF .C NEQ PCODE AND .SAVTYP [1] NEQ -1
:  940        1002  3      THEN
:  941        1003  3         VFEM [SBIT] = BYTSIZ (.SAVVAL [1]) - 1
:  942        1004  3      ELSE
:  943        1005  3         VFEM [SBIT] = 0;
:  944        1006  3
:  945        1007  3      VFEB = %O'200';
:  946        1008  3
:  947        1009  3      INCR I FROM 0 TO 3 DO
:  948        1010  4         BEGIN
:  949        1011  4
:  950        1012  4         IF .SAVTYP [.I] LSS 0 THEN VFEM = .VFEM OR .VFEB;
:  951        1013  4
:  952        1014  4         VFEB = .VFEB^(-1);
:  953        1015  3         END;
:  954        1016  3
:  955        1017  3      IF .VFEM [ALLBITS] NEQ 0 THEN FC [XBIT] = TRUE;
:  956        1018  3
:  957        1019  3      ! Output the code
:  958        1020  3      ! Also, check range of constant parameters
:  959        1021  3      !
:  960        1022  3      PUTBYT (.FC);
:  961        1023  3
:  962        1024  3      IF .VFEM [ALLBITS] NEQ 0 THEN PUTBYT (.VFEM [ALLBITS]);
:  963        1025  3
:  964        1026  3      INCR I FROM 0 TO 3 DO
:  965        1027  3
:  966        1028  3         CASE .SAVTYP [.I] FROM -1 TO 1 OF
:  967        1029  3            SET
:  968        1030  3            ! Case -1  Variable format expression
:  969        1031  3            !
:  970        1032  3
:  971        1033  3            [-1] :
```

```
;   972      1034  3                 ERROR (ERRFMTCHAR);
;   973      1035  3             ! Case 0   Not present
;   974      1036  3             !
;   975      1037  3
;   976      1038  3             [0] :
;   977      1039  3                 0;
;   978      1040  3             ! Case +1  Constant
;   979      1041  3             !
;   980      1042  3
;   981      1043  3             [1] :
;   982      1044  4                 BEGIN
;   983      1045  4
;   984      1046  4                 CASE .I FROM 0 TO 3 OF
;   985      1047  4                     SET
;   986      1048  4                     ! 0 - Repetition factor
;   987      1049  4                     !
;   988      1050  4
;   989      1051  4                     [0] :
;   990      1052  5                         BEGIN
;   991      1053  5
;   992      1054  5                         IF .SAVVAL [0] LEQ 0 THEN ERROR (ERRFMTRNGE);
;   993      1055  5
;   994      1056  5                         IF .SAVVAL [0] NEQ 1
;   995      1057  5                         THEN
;   996      1058  6                             BEGIN
;   997      1059  6                             PUTBYT (.SAVVAL [0]);
;   998      1060  6
;   999      1061  6                             IF .VFEM [RSBITS] EQL 2 THEN PUTBYT (.SAVVAL [0]/256);
;  1000      1062  6
;  1001      1063  5                             END;
;  1002      1064  5
;  1003      1065  4                         END;
;  1004      1066  4                     ! 1 - Width or scaling factor
;  1005      1067  4                     !
;  1006      1068  4
;  1007      1069  4                     [1] :
;  1008      1070  5                         BEGIN
;  1009      1071  5
;  1010      1072  5                         IF .C EQL PCODE
;  1011      1073  5                         THEN
;  1012      1074  5
;  1013      1075  5                             IF .SAVVAL [1] LSS -128 OR .SAVVAL [1] GTR 127
;  1014      1076  5                             THEN
;  1015      1077  6                                 ERROR (ERRFMTRNGE)
;  1016      1078  5                             ELSE
;  1017      1079  5                                 0
;  1018      1080  5
;  1019      1081  5                         ELSE
;  1020      1082  5
;  1021      1083  5                             IF .SAVVAL [1] LSS 0 THEN ERROR (ERRFMTRNGE);
;  1022      1084  5
;  1023      1085  5                         PUTBYT (.SAVVAL [1]);
;  1024      1086  5
;  1025      1087  5                         IF .VFEM [SBIT] NEQ 0 THEN PUTBYT (.SAVVAL [1]/256);
;  1026      1088  5
;  1027      1089  4                         END;
;  1028      1090  4                     ! 2 - Decimal field width
; 1029          1091  4                             !
; 1030          1092  4
; 1031          1093  4                             [2] :
; 1032          1094  5                                 BEGIN
; 1033          1095  5
; 1034          1096  5                                 IF .SAVVAL [2] LSS 0 OR .SAVVAL [2] GTR 255 THEN ERROR (ERRFMTRNGE);
; 1035          1097  5
; 1036          1098  5                                 PUTBYT (.SAVVAL [2]);
; 1037          1099  4                                 END;
; 1038          1100  4                             ! 3 - Exponent field
; 1039          1101  4                             !
; 1040          1102  4
; 1041          1103  4                             [3] :
; 1042          1104  5                                 BEGIN
; 1043          1105  5
; 1044          1106  5                                 IF .SAVVAL [3] LSS 0 OR .SAVVAL [3] GTR 255 THEN ERROR (ERRFMTRNGE);
; 1045          1107  5
; 1046          1108  5                                 PUTBYT (.SAVVAL [3]);
; 1047          1109  4                                 END;
; 1048          1110  4                             TES;
; 1049          1111  4
; 1050          1112  4                         END
; 1051          1113  3                     TES;
; 1052          1114  3
; 1053          1115  2             END;
; 1054          1116  2
; 1055          1117  2         CH$FILL (0, %UPVAL*(K_PTR_OFFSET + L_NEST), SAVVAL [0]);    ! Zero to but not including NEST
; 1056          1118  1         END;


00  00  05  05  05  01  01  00  10  10  00  00  00  00  10  00418 P.AAB:  .BYTE   16, 0, 0, 0, 0, 16, 16, 0, 1, 1, 5, 5, 5, - ;
                                    0B  0B  0B  03  00  00  00427                  0, 0, 0, 0, 3, 11, 11, 11                  ;

                                                    FMT_PRM_LIMITS=     P.AAB


                                                007C 00000 REDUCE: .WORD   Save R2,R3,R4,R5,R6                          ; 0806
                          56      0000V  CF   9E 00002          MOVAB   PUTBYT, R6                                   ;
                          55         04  AC   D0 00007          MOVL    C, R5                                        ; 0914
                          53             55   D0 0000B          MOVL    R5, FC                                       ;
                                         03   12 0000E          BNEQ    1$                                           ;
                                       0168   31 00010          BRW     34$                                          ;
                          0D             55   D1 00013 1$:      CMPL    R5, #13                                      ; 0921
                                         39   19 00016          BLSS    8$                                           ;
                          52        C2 AF45   9E 00018          MOVAB   FMT_PRM_LIMITS-13[R5], R2                    ; 0936
                                 04      AA   D5 0001D          TSTL    4(SAVTYP)                                    ; 0929
                                         11   12 00020          BNEQ    3$                                           ;
                          08             62   E9 00022          BLBC    (R2), 2$                                     ; 0936
                          53             14   C0 00025          ADDL2   #20, FC                                      ; 0939
                                 08      AA   7C 00028          CLRQ    8(SAVTYP)                                    ; 0940
                                         24   11 0002B          BRB     8$                                           ; 0934
                 20       62             04   E1 0002D 2$:      BBC     #4, (R2), 8$                                 ; 0944
                                         09   11 00031          BRB     4$                                           ;
                                 08      AA   D5 00033 3$:      TSTL    8(SAVTYP)                                    ; 0949
                                         07   12 00036          BNEQ    5$                                           ;
                 15       62             01   E1 00038          BBC     #1, (R2), 8$                                 ; 0956
```

```
                                             0127 31 0003C 4$:    BRW       30$                               ; 0959
                                         0C    AA D5 0003F 5$:    TSTL      12(SAVTYP)                        ; 0965
                                               06 12 00042        BNEQ      6$                                ;
                    09           62            02 E1 00044        BBC       #2, (R2), 8$                      ; 0972
                                               04 11 00048        BRB       7$                                ;
                    03           62            03 E1 0004A 6$:    BBC       #3, (R2), 8$                      ; 0979
                                 53            03 C0 0004E 7$:    ADDL2     #3, FC                            ;
                                 0F            55 D1 00051 8$:    CMPL      R5, #15                           ; 0983
                                               0A 12 00054        BNEQ      9$                                ;
                                         04    AB D5 00056        TSTL      4(SAVVAL)                         ;
                                               E1 19 00059        BLSS      4$                                ;
                                         04    AA D5 0005B        TSTL      4(SAVTYP)                         ;
                                               DC 15 0005E        BLEQ      4$                                ;
                                               54 D4 00060 9$:    CLRL      VFEM                              ; 0987
                                               6A D5 00062        TSTL      (SAVTYP)                          ; 0995
                                               05 15 00064        BLEQ      10$                               ;
                                 01            6B D1 00066        CMPL      (SAVVAL), #1                      ;
                                               05 12 00069        BNEQ      11$                               ;
                                 54            03 8A 0006B 10$:   BICB2     #3, VFEM                          ; 0997
                                               0C 11 0006E        BRB       12$                               ;
                                               6B DD 00070 11$:   PUSHL     (SAVVAL)                          ; 0999
                          0000V  CF            01 FB 00072        CALLS     #1, BYTSIZ                        ;
          54        02           00            50 F0 00077        INSV      R0, #0, #2, VFEM                  ;
                                 0C            55 D1 0007C 12$:   CMPL      R5, #12                           ; 1001
                                               1D 13 0007F        BEQL      13$                               ;
                       FFFFFFFF  8F      04    AA D1 00081        CMPL      4(SAVTYP), #-1                    ;
                                               13 13 00089        BEQL      13$                               ;
                                         04    AB DD 0008B        PUSHL     4(SAVVAL)                         ; 1003
                          0000V  CF            01 FB 0008E        CALLS     #1, BYTSIZ                        ;
                                 51      FF    A0 9E 00093        MOVAB     -1(R0), R1                        ;
          54        01           02            51 F0 00097        INSV      R1, #2, #1, VFEM                  ;
                                               03 11 0009C        BRB       14$                               ;
                                 54            04 8A 0009E 13$:   BICB2     #4, VFEM                          ; 1005
                                 51      80    8F 9A 000A1 14$:   MOVZBL    #128, VFEB                        ; 1007
                                               50 D4 000A5        CLRL      I                                 ; 1009
                                             6A40 D5 000A7 15$:   TSTL      (SAVTYP)[I]                       ; 1012
                                               03 18 000AA        BGEQ      16$                               ;
                                 54            51 C8 000AC        BISL2     VFEB, VFEM                        ;
                    51           51      FF    8F 78 000AF 16$:   ASHL      #-1, VFEB, VFEB                   ; 1014
                    EF           50            03 F3 000B4        AOBLEQ    #3, I, 15$                        ; 1009
                                               52 D4 000B8        CLRL      R2                                ; 1017
                                               54 D5 000BA        TSTL      VFEM                              ;
                                               06 13 000BC        BEQL      17$                               ;
                                               52 D6 000BE        INCL      R2                                ;
                                 53      80    8F 88 000C0        BISB2     #128, FC                          ;
                                               53 DD 000C4 17$:   PUSHL     FC                                ; 1022
                                 66            01 FB 000C6        CALLS     #1, PUTBYT                        ;
                                 05            52 E9 000C9        BLBC      R2, 18$                           ; 1024
                                               54 DD 000CC        PUSHL     VFEM                              ;
                                 66            01 FB 000CE        CALLS     #1, PUTBYT                        ;
                                               53 D4 000D1 18$:   CLRL      I                                 ; 1026
                    02 FFFFFFFF  8F          6A43 CF 000D3 19$:   CASEL     (SAVTYP)[I], #-1, #2              ; 1028
                  D008         0099          008A    000DC 20$:   .WORD     30$-20$,-                         ;
                                                                            33$-20$,-                         ;
                                                                            21$-20$                           ;
                                               46 11 000E2        BRB       25$                               ; 1034
                    03           00            53 CF 000E4 21$:   CASEL     I, #0, #3                         ; 1046
```

```
         006F          005E          0027          0008     000E8 22$:    .WORD   23$-22$,-                                    ;
                                                                                  24$-22$,-                                    ;
                                                                                  28$-22$,-                                    ;
                                                                                  29$-22$                                      ;
                                                     6B  D5 000F0 23$:    TSTL    (SAVVAL)                                     ; 1054
                                                     72  15 000F2         BLEQ    30$                                          ;
                                       01            6B  D1 000F4         CMPL    (SAVVAL), #1                                 ; 1056
                                                     7C  13 000F7         BEQL    33$                                          ;
                                                     6B  DD 000F9         PUSHL   (SAVVAL)                                     ; 1059
                                       66            01  FB 000FB         CALLS   #1, PUTBYT                                   ;
           02            54            02            00  ED 000FE         CMPZV   #0, #2, VFEM, #2                             ; 1061
                                                     70  12 00103         BNEQ    33$                                          ;
                         7E            6B 00000100   8F  C7 00105         DIVL3   #256, (SAVVAL), -(SP)                        ;
                                                     63  11 0010D         BRB     32$                                          ;
                                       0C            55  D1 0010F 24$:    CMPL    R5, #12                                      ; 1072
                                                     18  12 00112         BNEQ    26$                                          ;
                                       52       04   AB  D0 00114         MOVL    4(SAVVAL), R2                                ; 1075
                            FFFFFF80   8F            52  D1 00118         CMPL    R2, #-128                                    ;
                                                     45  19 0011F         BLSS    30$                                          ;
                            0000007F   8F            52  D1 00121         CMPL    R2, #127                                     ;
                                                     08  15 00128         BLEQ    27$                                          ;
                                                     3A  11 0012A 25$:    BRB     30$                                          ; 1077
                                       52       04   AB  D0 0012C 26$:    MOVL    4(SAVVAL), R2                                ; 1083
                                                     34  19 00130         BLSS    30$                                          ;
                                                     52  DD 00132 27$:    PUSHL   R2                                           ; 1085
                                       66            01  FB 00134         CALLS   #1, PUTBYT                                   ;
                         3A            54            02  E1 00137         BBC     #2, VFEM, 33$                                ; 1087
                         7E       04   AB 00000100   8F  C7 0013B         DIVL3   #256, 4(SAVVAL), -(SP)                       ;
                                                     2C  11 00144         BRB     32$                                          ;
                                       52       08   AB  D0 00146 28$:    MOVL    8(SAVVAL), R2                                ; 1096
                                                     1A  19 0014A         BLSS    30$                                          ;
                            000000FF   8F            52  D1 0014C         CMPL    R2, #255                                     ;
                                                     11  14 00153         BGTR    30$                                          ;
                                                     19  11 00155         BRB     31$                                          ; 1098
                                       52       0C   AB  D0 00157 29$:    MOVL    12(SAVVAL), R2                               ; 1106
                                                     09  19 0015B         BLSS    30$                                          ;
                            000000FF   8F            52  D1 0015D         CMPL    R2, #255                                     ;
                                                     0A  15 00164         BLEQ    31$                                          ;
                                                     3E  DD 00166 30$:    PUSHL   #62                                          ;
                            00000000G  00            01  FB 00168         CALLS   #1, FOR$$SIGNAL_STO                          ;
                                                         04 0016F         RET                                                  ;
                                                     52  DD 00170 31$:    PUSHL   R2                                           ; 1108
                                       66            01  FB 00172 32$:    CALLS   #1, PUTBYT                                   ;
         FF58            53            01            03  F1 00175 33$:    ACBL    #3, #1, I, 19$                               ; 1028
           2C            00            6E            00  2C 0017B 34$:    MOVC5   #0, (SP), #0, #44, (SAVVAL)                  ; 1117
                                                     6B     00180                                                              ;
                                                         04 00181         RET                                                  ; 1118

; Routine Size:  386 bytes,    Routine Base:  _FOR$CODE + 042D
; 1058          1119   1 ROUTINE DEFER (C, N) : CALL_G3 NOVALUE =
; 1059          1120   1
; 1060          1121   1 !++
; 1061          1122   1 ! FUNCTIONAL DESCRIPTION:
; 1062          1123   1 !
; 1063          1124   1 !       Cuase the reduction of the current format item to be deferred
; 1064          1125   1 !       until the W.D portion has been read
; 1065          1126   1 !
; 1066          1127   1 ! FORMAL PARAMETERS:
; 1067          1128   1 !
; 1068          1129   1 !       C       - format code
; 1069          1130   1 !       N       - number of parameters to follow (1 or 2)
; 1070          1131   1 !
; 1071          1132   1 ! IMPLICIT INPUTS:
; 1072          1133   1 !
; 1073          1134   1 !       FMTDAT array
; 1074          1135   1 !
; 1075          1136   1 !
; 1076          1137   1 ! IMPLICIT OUTPUTS:
; 1077          1138   1 !
; 1078          1139   1 !       repetition count, if any, saved in FMTDAT
; 1079          1140   1 !       format code and parameter count saved also in FMTDAT
; 1080          1141   1 !
; 1081          1142   1 ! ROUTINE VALUE:
; 1082          1143   1 !
; 1083          1144   1 !       NONE
; 1084          1145   1 !
; 1085          1146   1 ! SIDE EFFECTS:
; 1086          1147   1 !
; 1087          1148   1 !       SIGNAL_STOPs FOR$SYNERRFOR (62="SYNTAX ERROR IN FORMAT")
; 1088          1149   1 !
; 1089          1150   1 !--
; 1090          1151   1
; 1091          1152   2     BEGIN
; 1092          1153   2     EXT_REG;                                        ! Declare external registers
; 1093          1154   2     NZERO ();
; 1094          1155   2     NSAVE ();
; 1095          1156   2     PTR [L_FDEFER] = .C;
; 1096          1157   2     PTR [L_FCOUNT] = .N;
; 1097          1158   1     END;



                                    0000 00000 DEFER:   .WORD   Save nothing                                        ; 1119
            0000V  CF            00   FB 00002          CALLS   #0, NZERO                                           ; 1154
            0000V  CF            00   FB 00007          CALLS   #0, NSAVE                                           ; 1155
                   69       04   AC   7D 0000C          MOVQ    C, (PTR)                                            ; 1156
                                      04 00010          RET                                                         ; 1158

; Routine Size:  17 bytes,    Routine Base:  _FOR$CODE + 05AF
; 1099          1159  1 ROUTINE UNDEFER : CALL_G3 NOVALUE =
; 1100          1160  1
; 1101          1161  1 !++
; 1102          1162  1 ! FUNCTIONAL DESCRIPTION:
; 1103          1163  1 !
; 1104          1164  1 !       Complete the reduction of a format item which was deferred
; 1105          1165  1 !
; 1106          1166  1 ! FORMAL PARAMETERS:
; 1107          1167  1 !
; 1108          1168  1 !
; 1109          1169  1 ! IMPLICIT INPUTS:
; 1110          1170  1 !
; 1111          1171  1 !       FMTDAT array
; 1112          1172  1 !
; 1113          1173  1 ! IMPLICIT OUTPUTS:
; 1114          1174  1 !
; 1115          1175  1 !       FMTDAT array
; 1116          1176  1 !
; 1117          1177  1 ! ROUTINE VALUE:
; 1118          1178  1 !
; 1119          1179  1 !       NONE
; 1120          1180  1 !
; 1121          1181  1 ! SIDE EFFECTS:
; 1122          1182  1 !
; 1123          1183  1 !       SIGNAL_STOPs FOR$SYNERRFOR (62="SYNTAX ERROR IN FORMAT")
; 1124          1184  1 !
; 1125          1185  1 !--
; 1126          1186  1
; 1127          1187  2     BEGIN
; 1128          1188  2     EXT_REG;                                  ! Declare external registers
; 1129          1189  2
; 1130          1190  2     IF .PTR [L_FDEFER] NEQ 0
; 1131          1191  2     THEN
; 1132          1192  3         BEGIN
; 1133          1193  3         NSAVE ();
; 1134          1194  3         REDUCE (.PTR [L_FDEFER]);
; 1135          1195  3         END
; 1136          1196  2     ELSE
; 1137          1197  3         BEGIN
; 1138          1198  3
; 1139          1199  3         IF .PTR [L_TYPE] NEQ 0 THEN ERROR (ERRFMXTNUM);
; 1140          1200  3
; 1141          1201  3         IF .PTR [L_SIGN] NEQ 0 THEN ERROR (ERRFMTCHAR);
; 1142          1202  3
; 1143          1203  3         PTR [L_NVAL] = 0;
; 1144          1204  3         PTR [L_TYPE] = 0;
; 1145          1205  3         PTR [L_SIGN] = 0;
; 1146          1206  2         END;
; 1147          1207  2
; 1148          1208  1     END;



                                   0000 00000 UNDEFER:.WORD   Save nothing                                  ; 1159
                                69  D5 00002         TSTL    (PTR)                                         ; 1190
```

```
                                          0D  13 00004          BEQL    1$                                        ;
                         0000V  CF        00  FB 00006          CALLS   #0, NSAVE                                 ; 1193
                                          69  DD 0000B          PUSHL   (PTR)                                     ; 1194
                          FE5B  CF        01  FB 0000D          CALLS   #1, REDUCE                                ;
                                          04     00012          RET                                               ; 1190
                                    18    A9  D5 00013 1$:      TSTL    24(PTR)                                   ; 1199
                                          05  12 00016          BNEQ    2$                                        ;
                                    10    A9  D5 00018          TSTL    16(PTR)                                   ; 1201
                                          0A  13 0001B          BEQL    3$                                        ;
                                          3E  DD 0001D 2$:      PUSHL   #62                                       ;
                     00000000G  00        01  FB 0001F          CALLS   #1, FOR$$SIGNAL_STO                       ;
                                          04     00026          RET                                               ;
                                    14    A9  7C 00027 3$:      CLRQ    20(PTR)                                   ; 1203
                                    10    A9  D4 0002A          CLRL    16(PTR)                                   ; 1205
                                          04     0002D          RET                                               ; 1208

; Routine Size:  46 bytes,    Routine Base:  _FOR$CODE + 05C0
; 1150          1209   1 ROUTINE NZERO : CALL_G3 NOVALUE =
; 1151          1210   1
; 1152          1211   1 !++
; 1153          1212   1 ! FUNCTIONAL DESCRIPTION:
; 1154          1213   1 !
; 1155          1214   1 !       Check context for a format item with has an optional leading
; 1156          1215   1 !       number field. If there is a deferred item, then a separator is
; 1157          1216   1 !       required, and we have an ambiguous case.  The leading numeric
; 1158          1217   1 !       will be attached to the preceding format item.
; 1159          1218   1 !
; 1160          1219   1 ! FORMAL PARAMETERS:
; 1161          1220   1 !
; 1162          1221   1 !       None
; 1163          1222   1 !
; 1164          1223   1 ! IMPLICIT INPUTS:
; 1165          1224   1 !
; 1166          1225   1 !       FMTDAT array
; 1167          1226   1 !
; 1168          1227   1 !
; 1169          1228   1 ! IMPLICIT OUTPUTS:
; 1170          1229   1 !
; 1171          1230   1 !       NONE
; 1172          1231   1 !
; 1173          1232   1 ! ROUTINE VALUE:
; 1174          1233   1 !
; 1175          1234   1 !       NONE
; 1176          1235   1 !
; 1177          1236   1 ! SIDE EFFECTS:
; 1178          1237   1 !
; 1179          1238   1 !       SIGNAL_STOPs FOR$SYNERRFOR (62="SYNTAX ERROR IN FORMAT")
; 1180          1239   1 !
; 1181          1240   1 !--
; 1182          1241   1
; 1183          1242   2     BEGIN
; 1184          1243   2     EXT_REG;                                 ! Declare external registers
; 1185          1244   2
; 1186          1245   2     IF .PTR [L_FDEFER] NEQ 0 THEN ERROR (ERRFMTSEPR);
; 1187          1246   2
; 1188          1247   1     END;



                                   0000 00000 NZERO:   .WORD    Save nothing                                   ; 1209
                                 69  D5 00002          TSTL     (PTR)                                          ; 1245
                                 09  13 00004          BEQL     1$                                             ;
                                 3E  DD 00006          PUSHL    #62                                            ;
                 00000000G  00   01  FB 00008          CALLS    #1, FOR$$SIGNAL_STO                            ;
                                     04 0000F 1$:      RET                                                     ; 1247

; Routine Size:  16 bytes,    Routine Base:  _FOR$CODE + 05EE
; 1190          1248   1 ROUTINE NSAVE : CALL_G3 NOVALUE =
; 1191          1249   1
; 1192          1250   1 !++
; 1193          1251   1 ! FUNCTIONAL DESCRIPTION:
; 1194          1252   1 !
; 1195          1253   1 !       Save the values of PTR[L_NVAL] and PTR[L_TYPE] in SAVTYP and SAVVAL
; 1196          1254   1 !
; 1197          1255   1 ! FORMAL PARAMETERS:
; 1198          1256   1 !
; 1199          1257   1 !       None
; 1200          1258   1 !
; 1201          1259   1 ! IMPLICIT INPUTS:
; 1202          1260   1 !
; 1203          1261   1 !       PTR[L_NVAL]     - value of a  numeric term
; 1204          1262   1 !       PTR[L_TYPE]     - PTR[L_TYPE] of the numeric term
; 1205          1263   1 !       PTR[L_SIGN]     - indicator if a minus PTR[L_SIGN] has been encounted
; 1206          1264   1 !       PTR[L_PHASE]    - indicator of what the PTR[[_NVAL] and PTR[L_TYPE] associate
; 1207          1265   1 !                 to repetition count, W or D.
; 1208          1266   1 !
; 1209          1267   1 ! IMPLICIT OUTPUTS:
; 1210          1268   1 !
; 1211          1269   1 !       FMTDAT array
; 1212          1270   1 !
; 1213          1271   1 ! ROUTINE VALUE:
; 1214          1272   1 !
; 1215          1273   1 !       NONE
; 1216          1274   1 !
; 1217          1275   1 ! SIDE EFFECTS:
; 1218          1276   1 !
; 1219          1277   1 !       SIGNAL_STOPs FOR$SYNERRFOR (62="SYNTAX ERROR IN FORMAT")
; 1220          1278   1 !
; 1221          1279   1 !--
; 1222          1280   1
; 1223          1281   2    BEGIN
; 1224          1282   2    EXT_REG;                                  ! Declare external registers
; 1225          1283   2
; 1226          1284   2    IF .PTR [L_SIGN] NEQ 0 THEN ERROR (ERRFMTPTR [L_SIGN]);
; 1227          1285   2
; 1228          1286   2    SAVVAL [.PTR [L_PHASE]] = .PTR [L_NVAL];
; 1229          1287   2    SAVTYP [.PTR [L_PHASE]] = .PTR [L_TYPE];
; 1230          1288   2    PTR [L_PHASE] = .PTR [L_PHASE] + 1;
; 1231          1289   2    PTR [L_SIGN] = 0;
; 1232          1290   2    PTR [L_NVAL] = 0;
; 1233          1291   2    PTR [L_TYPE] = 0;
; 1234          1292   1    END;



                                  0000 00000 NSAVE:  .WORD    Save nothing                                   ; 1248
                       10     A9  D5 00002           TSTL     16(PTR)                                        ; 1284
                              0A  13 00005           BEQL     1$                                             ;
                              3E  DD 00007           PUSHL    #62                                            ;
          00000000G  00       01  FB 00009           CALLS    #1, FOR$$SIGNAL_STO                            ;
                                  04 00010           RET                                                     ;
                     50    08 A9  D0 00011 1$:       MOVL     8(PTR), R0                                     ; 1286
```

```
                                 6B40       14   A9   D0 00015          MOVL    20(PTR), (SAVVAL)[R0]                 ;
                                 6A40       18   A9   D0 0001A          MOVL    24(PTR), (SAVTYP)[R0]                 ; 1287
                                            08   A9   D6 0001F          INCL    8(PTR)                                ; 1288
                                            10   A9   7C 00022          CLRQ    16(PTR)                               ; 1289
                                            18   A9   D4 00025          CLRL    24(PTR)                               ; 1291
                                                      04 00028          RET                                           ; 1292

; Routine Size:  41 bytes,    Routine Base:  _FOR$CODE + 05FE
```

```
ROUTINE PUTBYT (V) : CALL_G3 NOVALUE =

!++
! FUNCTIONAL DESCRIPTION:
!
!       Output a byte through argument
!
! FORMAL PARAMETERS:
!
!       V       - vaule to be output
!
! IMPLICIT INPUTS:
!
!       FMTDAT array
!
! IMPLICIT OUTPUTS:
!
!       FMTDAT array
!
! ROUTINE VALUE:
!
!       NONE
!
! SIDE EFFECTS:
!
!       SIGNAL_STOPs FOR$SYNERRFOR (62=''SYNTAX ERROR IN FORMAT'')
!
!--

    BEGIN

    LOCAL
        A_OLD_BUF_BEG;                          ! Place to save old format buffer address

    EXT_REG;                                    ! Declare external registers

    !+
    ! Check if room in currently allocated format buffer.
    ! If not allocate twice as much and copy old format buffer,
    ! then deallocate old format buffer.
    !-

    IF .PTR [L_NCHAR] GEQ .PTR [L_FMT_BUF_SIZ]
    THEN
        BEGIN
        A_OLD_BUF_BEG = .PTR [A_FMT_BUF_BEG];

        IF .PTR [L_FMT_BUF_SIZ] GEQ 32768 THEN ERROR ();

        PTR [A_FMT_BUF_BEG] = FOR$$GET_VM (.PTR [L_FMT_BUF_SIZ]*2);
        CH$MOVE (.PTR [L_FMT_BUF_SIZ], .A_OLD_BUF_BEG, .PTR [A_FMT_BUF_BEG]);
        FOR$$FREE_VM (.PTR [L_FMT_BUF_SIZ], .A_OLD_BUF_BEG);
        PTR [L_FMT_BUF_SIZ] = .PTR [L_FMT_BUF_SIZ]*2;
        END;

    !+
    ! Store away the byte in format buffer
```

```
; 1293          1350  2      !-
; 1294          1351  2
; 1295          1352  2      (.PTR [A_FMT_BUF_BEG] + .PTR [L_NCHAR])<0, 8> = .V;
; 1296          1353  2      PTR [L_NCHAR] = .PTR [L_NCHAR] + 1;
; 1297          1354  1      END;



                                                         007C 00000 PUTBYT: .WORD    Save R2,R3,R4,R5,R6                           ; 1293
                                   28   A9        1C   A9  D1 00002         CMPL     28(PTR), 40(PTR)                              ; 1335
                                                       3E  19 00007         BLSS     2$                                            ;
                                        56        20   A9  D0 00009         MOVL     32(PTR), A_OLD_BUF_BEG                        ; 1338
                             00008000   8F        28   A9  D1 0000D         CMPL     40(PTR), #32768                               ; 1340
                                                       0A  19 00015         BLSS     1$                                            ;
                                                       3E  DD 00017         PUSHL    #62                                           ;
                             00000000G  00             01  FB 00019         CALLS    #1, FOR$$SIGNAL_STO                           ;
                                                           04 00020         RET                                                    ;
                          7E       28   A9             01  78 00021 1$:     ASHL     #1, 40(PTR), -(SP)                            ; 1342
                             00000000G  00             01  FB 00026         CALLS    #1, FOR$$GET_VM                               ;
                                   20   A9             50  D0 0002D         MOVL     R0, 32(PTR)                                   ;
                     20   B9            66        28   A9  28 00031         MOVC3    40(PTR), (A_OLD_BUF_BEG), @32(PTR)            ; 1343
                                                       56  DD 00037         PUSHL    A_OLD_BUF_BEG                                 ; 1344
                                                  28   A9  DD 00039         PUSHL    40(PTR)                                       ;
                             00000000G  00             02  FB 0003C         CALLS    #2, FOR$$FREE_VM                              ;
                                   28   A9             02  C4 00043         MULL2    #2, 40(PTR)                                   ; 1345
                          50       20   A9        1C   A9  C1 00047 2$:     ADDL3    28(PTR), 32(PTR), R0                          ; 1352
                                        60        04   AC  90 0004D         MOVB     V, (R0)                                       ;
                                                  1C   A9  D6 00051         INCL     28(PTR)                                       ; 1353
                                                           04 00054         RET                                                    ; 1354

; Routine Size:  85 bytes,    Routine Base:  _FOR$CODE + 0627
; 1299          1355  1 ROUTINE BYTSIZ (VAL) =
; 1300          1356  1
; 1301          1357  1 !++
; 1302          1358  1 ! FUNCTIONAL DESCRIPTION:
; 1303          1359  1 !
; 1304          1360  1 !       Calculate the number of bytes to hold VAL
; 1305          1361  1 !
; 1306          1362  1 ! FORMAL PARAMETERS:
; 1307          1363  1 !
; 1308          1364  1 !       VAL     - value to be sized
; 1309          1365  1 !
; 1310          1366  1 ! IMPLICIT INPUTS:
; 1311          1367  1 !
; 1312          1368  1 !       NONE
; 1313          1369  1 !
; 1314          1370  1 !
; 1315          1371  1 ! IMPLICIT OUTPUTS:
; 1316          1372  1 !
; 1317          1373  1 !       NONE
; 1318          1374  1 !
; 1319          1375  1 ! ROUTINE VALUE:
; 1320          1376  1 !
; 1321          1377  1 !       NONE
; 1322          1378  1 !
; 1323          1379  1 ! SIDE EFFECTS:
; 1324          1380  1 !
; 1325          1381  1 !       SIGNAL_STOPs FOR$SYNERRFOR (62="SYNTAX ERROR IN FORMAT")
; 1326          1382  1 !
; 1327          1383  1 !--
; 1328          1384  1
; 1329          1385  2     BEGIN
; 1330          1386  2
; 1331          1387  2     MAP
; 1332          1388  2         VAL : LONG UNSIGNED;
; 1333          1389  2
; 1334          1390  2     IF .VAL LSS 0
; 1335          1391  2     THEN
; 1336          1392  3         ERROR (ERRFMTRNGE)
; 1337          1393  2     ELSE
; 1338          1394  2
; 1339          1395  2         IF .VAL LSS 256
; 1340          1396  2         THEN
; 1341          1397  2             RETURN 1
; 1342          1398  2         ELSE
; 1343          1399  2
; 1344          1400  2             IF .VAL LSS 65536 THEN RETURN 2 ELSE ERROR (ERRFMTRNGE);
; 1345          1401  2
; 1346          1402  1     END;



                                    0004 00000 BYTSIZ: .WORD   Save R2                                      ; 1355
                 52       04    AC   D0 00002          MOVL    VAL, R2                                      ; 1390
                                1A   19 00006          BLSS    2$
          00000100  8F          52   D1 00008          CMPL    R2, #256                                     ; 1395
```

```
                                                        04  18 0000F            BGEQ    1$                                       ;
                                         50             01  D0 00011            MOVL    #1, R0                                   ; 1397
                                                            04 00014            RET                                              ;
                             00010000    8F             52  D1 00015 1$:        CMPL    R2, #65536                               ; 1400
                                                        04  18 0001C            BGEQ    2$                                       ;
                                         50             02  D0 0001E            MOVL    #2, R0                                   ;
                                                            04 00021            RET                                              ;
                                                        3E  DD 00022 2$:        PUSHL   #62                                      ;
                             00000000G   00             01  FB 00024            CALLS   #1, FOR$$SIGNAL_STO                      ;
                                                        50  D4 0002B            CLRL    R0                                       ;
                                                            04 0002D            RET                                              ; 1402

; Routine Size:  46 bytes,    Routine Base:  _FOR$CODE + 067C


; 1347           1403  1 END
; 1348           1404  1
; 1349           1405  0 ELUDOM





;                                         PSECT SUMMARY
;
;        Name                       Bytes                         Attributes
;
;  _FOR$CODE                          1706  NOVEC,NOWRT,  RD ,  EXE,  SHR,  LCL,  REL,  CON,  PIC,ALIGN(2)




;                                  Library Statistics
;
;                                                 -------- Symbols --------         Pages         Processing
;        File                                     Total      Loaded   Percent       Mapped        Time
;
;  _$255$DUA28:[SYSLIB]STARLET.L32;1               9776          0         0          581          00:01.0
;  _$255$DUA28:[FORRTL.OBJ]FORLIB.L32;1             711          2         0           52          00:00.5
;  _$255$DUA28:[FORRTL.OBJ]RTLLIB.L32;1              36          0         0            8          00:00.1






;                                          COMMAND QUALIFIERS

;       BLISS/CHECK=(FIELD,INITIAL,OPTIMIZE)/NOTRACE/LIS=LIS$:FORFMTCP/OBJ=OBJ$:FORFMTCP MSRC$:FORFMTCP/UPDATE=(ENH$:FORFMTCP)

; Size:          1594 code + 112 data bytes
; Run Time:         00:36.2
; Elapsed Time:     01:28.9
; Lines/CPU Min:      2326
; Lexemes/CPU-Min: 16995
; Memory Used:  326 pages
; Compilation Complete
```

0180 AH-BT13A-SE
VAX/VMS V4.0

DIGITAL EQUIPMENT CORPORATION
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FORFIND
LIS

FORFMTINT
LIS

FOREXITHA
LIS

FORENODEF
LIS

FORENCOMF
LIS

FORIDATE
LIS

FORENDFIL
LIS

FORERRSNS
LIS

FOREXIT
LIS

FORERROR
LIS

FORFMTCP
LIS

FORENCOMO
LIS

FORINIDES
LIS